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AMERICAN GAS ENGINEERING JOURNAL

FORMERLY

AMERICAN GAS LIGHT JOURNAL

VOL. CVIII., No. 2
WHOLE No. 3123

NEW YORK, SATURDAY, JANUARY 12, 1918

Subscription $3 per year
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THIS GENERATOR SAVED BY

HYTEMPITE

Trade Mark Reg. U. S. Pat. Off.

THIS interesting photograph shows the crown arch of a generator in the Hartford, Connecticut, Gas Works, which had become loosened and it was impossible to repair it in the usual manner without tearing it down. Fire clay would not hold the old tile in place.

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26 CORTLANDT STREET NEW YORK

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NOTE:—

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Figures prove this and the guarantees of

THE UNITED GAS IMPROVEMENT CO., Philadelphia

Back it up

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COAL GAS PLANTS **WATER GAS PLANTS**

BY-PRODUCT MACHINERY

AMERICAN
GAS ENGINEERING JOURNAL

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Executive Foresight and Loyally Co-Operating Organizations Enable Gas Companies of Nation's Greatest City to Carry Through Against Unprecedented Loads

Output of Consolidated Gas Company of New York Increased Almost Fifty Per Cent on Short Notice to Meet Emergency—Sixth Day of Unparalleled Strain on Company's Manufacturing Capacity Finds No Consumer Denied Gas, Industrial or Otherwise—Brooklyn Union Copes With Demand 60 Per Cent in Excess of Normal—No Hold Back in Either Case in Sales of Heaters

By EUGENE C. MILES
Editor, American Gas Engineering Journal

The primary reason for the existence of any gas company is the rendering of public service. If it fails in this primary purpose it has failed in its mission, whether it pays dividends to its stockholders or not.

Public opinion, however, recognizes various contingencies that may excuse a utility for failure to perform the service that is expected of it. The principal of these are acts of God and conditions arising from a state of war.

The unusual coincidence of the nearest approach to a coal famine ever experienced in Greater New York, and the lowest temperatures ever recorded, continuing over a period of several days, might well be termed a blending of these two principal contingencies, hence an ample justification for a failure on the part of the gas companies serving the city to satisfy even their normal load, let alone 50 to 60 per cent added burdens.

But a competent and far-sighted organization in which the spirit of the public service is so deeply ingrained as to be almost instinctive can quite often, if it keeps its nerve, overcome what legal phraseology styles acts of God and conditions arising from a state of war.

This is what the Consolidated Gas Company, of New York, and the Brooklyn Union Gas Company have accomplished in the last fortnight.

As a consequence thousands who would otherwise have suffered intensely, other thousands who would have fallen sick and hundreds who might even have died have been spared.

A combination of coal shortage and a killing temperature is a tragic event in a city whose population reaches into the millions.

But for the manner in which the gas companies discharged their mission it might well have been infinitely more so.

A Great Achievement That Reacts Beneficially to the Whole Gas Industry

That they have not failed is a great thing to the Consolidated and the Brooklyn Union gas companies. It is a great thing for the people of New York—rich, well-to-do and poor alike. A huge—so huge that it is a marvel of management that it is not unwieldy—public utility corporation and another that rivals it in size have revealed themselves in a humanitarian role, have revealed that they *have* a soul, and further revelations are to follow.

Early in the year, when those in attendance were wiping the perspiration from their foreheads, gas men gathered from all parts of the country at the impromptu convention of the American Gas Institute, pressed one of the officers of the Consolidated for some hint as to whether the industry would be assured an adequate fuel supply during the coming winter. By directing his auditors' attention to certain horses, ordinarily employed in delivering gas coke, idly browsing in Westchester, he let them know by inference that the Consolidated was selling no coke.

Required Courage to Withhold Coke Sales

This, as has been stated, was many months ago. The Consolidated makes and uses considerable coke.

Selling coke as it is made is a good means of quickly turning over capital, and obtaining capital for short-time needs has put wrinkles on the forehead of a good many gas company managements since the country entered the money markets.

It required a considerable amount of courage on the part of so large a gas company to stop sales of coke over so long a period. It required also a considerable amount of executive foresight.

It was a matter of trade gossip last spring that the Consolidated was stocking up heavily on heaters. That it should do so with the lesson of last winter behind it, and the knowledge that there would be experienced by householders considerable difficulty in getting coal during the coming winter before it, it is not remarkable in itself that the company should have adopted this course. But other gas companies had the same lesson behind them, and many companies this winter have stopped selling heaters simply because they had no heaters to sell.

The Consolidated apparently had faith in the stability of its country, and wasn't deterred in its capacity as a merchandiser of heaters by that senseless lack of faith in the stability of things that hold many back from tying up money in appliances that even an ordinary merchandising sense would have revealed there would be a good market for.

1,300 Heaters Sold in a Day

It is fortunate for the people of New York that the Consolidated Gas Company proved itself so good a merchant. A tremendous suffering was averted thereby, as is attested by the fact that during the cold spell sales of gas heaters by the company reached as high as 1,300 in a day. When one stops to consider that each of these heaters meant warmth, perhaps life, to several human beings, the beneficial results of the company's forehandedness can be best appreciated.

There is another aspect to this feature. Each heater burns from 30 to 40 cu. ft. an hour. Assume ten hours' burning, and take the consumption at the lowest figure. Each thousand of these heaters sold under the intense demand adds 300,000 cu. ft. further to the company's load each day that passes.

There have been times when the average gas man's eyes would glisten at this wholesale putting on of new business within a few days. But, putting their own interests first, and ignoring the fact that the primary reason for the company's existence is to render public service, there can be no doubt it would seem better business for the company not to have sold those heaters.

It would not seem that there can be any money, even at adequate rates, in putting out gas under the forced draft the company has been working under during the trying days that have not yet passed.

Figures That Tell a Story in Themselves

On Friday, Dec. 28, 1917, the Consolidated's output was 129,417,000 cu. ft. On Saturday it was 143,676,000. On Sunday it was 142,165,000. Monday was a record day, with 145,026,000 cu. ft. consumed. On Tuesday, Jan. 1, 1918, there was a measure of relief in output of 125,891,000 cu. ft. These figures are for the boroughs of Manhattan and the Bronx alone. If Westchester and a portion of Queens are included, the total of the record day is brought up to 155,000,000 cu. ft.

By way of contrast the output for the three days, Dec. 30, 31, 1916, and Jan. 1, 1917, was 288,000,000 cu. ft., an average of 96,000,000 per day. That for the relatively same days in 1917 (Dec. 29, 30 and 31) was 430,867,000 cu. ft., an average of 143,622,333 plus.

These figures tell a story in themselves. They do not tell the whole story, of the men who made the result possible, of a great organization—including the president and the office boy—working constantly, intently, through the holidays, of superintendents shoveling coal, of the anxious eyes on pressures, etc. There are countless stories in these features alone.

The writer went up personally to the company's office to learn for himself what was going on, and found trucks loading up with heaters exclusively. While no consumer, industrial or otherwise, had been denied gas, he found that on the sixth day the peak of the Consolidated's load had probably been reached.

One reason why the company met the crisis successfully is that, through a third example of foresight, it got a good start. An officer who had authority in such matters got word through the weather forecaster that a distinct drop in temperature was due. He immediately advised the engineers so that they might speed up production and build up the stored supplies.

Brooklyn Union Reaches Peak 60 Per Cent Above Normal

The Brooklyn Union Gas Company was hit by a load 60 per cent above normal, after but a few days' breathing space following on a load that ran as high as 44 per cent above normal. And it is now a matter of record that no consumer was without gas through lack of supply.

It is true that some patrons were cut off for a time for reasons outside the control of the company, namely, freezing up in service pipes installed by plumbers or otherwise. But the willingness to serve on the part of the company was forcibly demonstrated in these cases by the promptitude with which its service men were sent out to relieve such situations, and the extremes to which these service men, once there, manifested a willingness to go to. Many cases were found in houses built long ago where the pipes were found frozen within the buildings as high as the third floor. They had sagged with a settling of the floors or through other causes. Similar trouble had never occurred before, due, doubtless, to the fact that the interior piping had never been subjected to such severe temperatures.

The Brooklyn Union from Dec. 9 to 16, inclusive, put out an average of 70,000,000 cu. ft. a day; the variations in the load being from a minimum of 68,000,000 cu. ft. to a maximum of 75,000,000 cu. ft. per day. They represented an average excess of 32 per cent over the corresponding days of last year in varying percentages of from 27 to 44 per cent excess.

In the second period—from Dec. 24 to Jan. 1, inclusive—it put out an average of 72,000,000 cu. ft. daily, this being a 35 per cent increase over the corresponding days of last year. These daily outputs reached as high as 85,000,000 cu. ft. per day, and varied from 22 to 60 per cent in excess of last year. For several consecutive days the excess over the corresponding days of last year was from 50 to 60 per cent.

Like the Consolidated, the Brooklyn Union had been

farsighted in that it had stocked up heavily in heating appliances last spring. No restrictions were placed on the sales of heaters at any time, and an adequate stock was on hand to meet the excessive demand. The company is still selling.

Depends on Coal Supply

The Brooklyn Union makes no coal gas. It is consequently dependent upon its supply of anthracite coal. The fact that it had an adequate supply to meet the abnormal demand is an evidence of foresight that parallels that of the Consolidated in holding on to its coke.

Since the first of December the company has been wrestling with an abnormal demand. Despite this, there had been manifested a tendency to divert some of its shipments to other consumers. But the management foresaw the conditions that did ensue, not, of course, to the extent of the actual occurrence. It convinced the authorities that it was right in its beliefs, and got its coal—fortunately for the people of its territory.

Without some enlargements and construction, completed within the last few months, the Brooklyn Union might have found difficulty in taking care of the load thrust upon it. Thus another evidence of farsighted management crops out.

It couldn't have been a very pleasant business paying out the money necessary for these improvements at a time when it was paying a cost vastly in excess of what it would have had to pay but a few years ago, but the Brooklyn Union read the handwriting on the wall; knew that its territory was going to use vastly more gas this winter than last winter, even if the weather conditions had been no more severe. It was faced with the alternative of paying these excess costs, or, perhaps, failing to render the quality of service it had established a reputation for rendering. It chose the first.

Checking Up the Contractors

But, conceding the willingness to pay the excess costs, the difficulties did not end there. Gas men know that in these days it is one thing to order certain equipment for delivery by a certain time, and quite another thing to have it delivered at that time. The Brooklyn Union knew its contractors were reliable. But it knew also that they, too, were not free from war-time complications.

Hence it followed up its orders with inspectors, whose duties were to stick on the job and to make sure that the equipment would be delivered and the construction completed by the time it was needed. Both objects sought were attained.

But the attainment cost money. Perhaps, too, it offended some especially sensitive contractors, who might have taken exception, on the grounds of past performances, to the company's seemingly doubting that they would live up to their promises in the tasks they had on hand.

There are some unique features in connection with the Brooklyn Union's accomplishment that, though as it turned out they had no bearing on it, are interesting nevertheless.

It has been said in the industry that in the eyes of the company's president all consumers are in the relation the company has to them literally "born free and equal." Rumor adds that he has very decided views in this particular—that it would be a personally unwise manager who would not give just as serious and courteous attention to a complaint from a 2,000-ft.-a-month consumer as to that from a 100,000-ft.-a-month patron. This, in fact, was the principle underlying the company's protest against having its coal diverted.

"If it doesn't come to us," it said in effect, "it will go to the public by a different means. Coming to us its beneficial effect can be as available to the small and irregular user as it is to the big and consistent customer. Following the ordinary channels of coal distribution, the regular customer will find less trouble in getting his wants at least partially filled than will the bag-lot customer who comes to the coal dealer's gate for his supply."

The Brooklyn Union did not intend to fall down in its task, if any human effort would avert such failure. But, in the face of a condition that was more than abnormal, it would have been a bold man who would have taken it upon himself to promise complete success.

Providing for Contingencies

To provide for the contingency of some possibly having to suffer, they established a priority of service list so that suffering would be averted to those least capable of sustaining it. The first items on this list are hospitals and dispensaries; the second, institutions for the care of the aged and children; the third, doctors' offices; the fourth, apartments and dwellings wherein proved illness is existent. There are many items on the list, but those given indicate sufficiently its scope and purpose. Nor was the working out of these priorities given over to chance. A committee was assigned to make it effective, and appointments to the committee were not merely honorary assignments. Since there was no occasion to deny anyone gas, the necessity of a drastic application of the priorities was avoided.

Like the Consolidated, the Brooklyn Union did not attain its victory without imposing an exceedingly heavy strain on its organization. The situation did not catch the company napping. In ample time before the real test came the order went down from the president's office that all hands stay on the job. This order did not involve merely the laborers in the gas works. It involved likewise the president himself and every responsible head in the organization, and it was obeyed to the letter.

The Significance of the Achievement

Naturally, the question arises, What has been accomplished?

First and foremost, the New York companies now have immeasurably strengthened personnels. Their organizations, executives and coal heavers alike, have tasted the stimulus of a seemingly impossible task well done.

They have been lifted beyond the plane of mere gas men.

Men who have worked as they have worked could not have done so if they had been actuated simply by the desire to establish a record gas output. A higher motive than this spurred them to their remarkable endeavors.

They sensed the responsibility that rested upon their shoulders, individually and collectively; they pictured the suffering that would ensue should they fall down.

Their training made them responsive to the call to public service.

Many doubtless realized and believed for the first time that a man can be just as useful to his country at home in war-time as he can in the battle trenches.

The public has learned at first hand the quality of the corporations into whose hands it has placed its gas supply franchises, will appreciate the quality of the brains and far-sighted executive ability that these corporations have been able to place in their service, because their hands are unhampered by governmental and civil service restrictions in their quest for those qualities.

Some few days from now, when its sees the Consolidated, for instance, which so wisely turned its coke-delivery horses loose in the pastures of Westchester last summer, start in selling coke again—not in quantities to the big interests, hotels, clubs, etc., but in bagload lots to the poor and moderately well-to-do—it will find some more of the old-time delusions that have been foisted upon it irreparably shattered.

It will understand now that when a public utility that has always rendered good service, even to the extent of going to Europe to buy coal, preaches public service, it does so because it believes that is its mission—not because it merely thinks the words have an agreeable sound.

All Accomplished Without Fuss and Publicity

And all this has been accomplished without fuss and publicity. Surely few who read the following reading notice, which was the only matter given to the local press by the Consolidated, would have sensed the truly dramatic struggle the gas company was waging to adequately and properly discharge its mission:

"The consumers of gas in Manhattan and the Bronx are requested to aid in every way in reducing the quantity of gas they are now using. Where the heating of one room is possible in place of two, but one room should be used. Where one light can be used in place of two, shut off the second light.

"The extraordinary conditions in New York City, due to the coal shortage, is placing a burden on the gas companies that is beyond all precedent, and is taxing the available facilities to the utmost, as well as the available supply of raw materials.

"The output of gas on Saturday last was over 40 per cent more than the corresponding day last year, and the company had to draw on its reserve stock.

"On Sunday the output was 47 per cent more than last year, and again the reserve stock of gas was drawn on when ordinarily the reserve stock on Sunday is readily replenished.

"Sunday, Dec. 23, the output of gas was 104,000,000 cu. ft., while Sunday, Dec. 30, it was 142,000,000 cu. ft., an increase of 38,000,000 cu. ft.

"It is believed that the present severe period can be successfully handled, provided the gas-consuming public aids by making their demands as light as possible to-day and for the next few days."

It is very much of a question if either of the companies as yet fully realize the great significance of the thing they have accomplished. Though it is certain that they have successfully and adequately met the crisis, they are not yet entirely "out of the woods," so to speak. They still have an abnormal condition to cope with, and a weather variation may at any time present a situation even more intense than that which they have so successfully fought through. They have not yet had time to settle back and get their perspective—to realize that *they have provided the most striking and spectacular justification and endorsement of private ownership that has been revealed in many decades.*

Heating Homes in Such Manner as to Keep the Body Warm and the Air That Is Breathed Cool

J. P. Conroy Discusses Radiant Heat—Hanging the Heaters of the Future as We Now Hang Lighting Fixtures

Radiation of heat is the communication of heat from one point to another through space without the use of any mechanical device to conduct it, such as flue pipes, tubes or wires, explained J. P. Conroy, of the General Gas Light Company, in his paper on "Radiant Heat," presented before the New England Section of the National Commercial Gas Association, Dec. 28, 1917. Radiant heat always goes in a straight line the way it is directed. The heat waves can perhaps be most simply illustrated by dropping a stone into a body of water and watching the waves produced, the waves growing broader and less intense the farther away from the starting point they travel.

Radiant heat may be likened to the wireless telegraph instrument. Wireless waves are produced and travel through miles of space through storm, rain or snow, against a terrific head wind. Radiant heat carries through space in exactly the same manner, only it is heat waves, not electrical waves.

The best example of radiant heat is the sun. The sun is the central governing body of the solar system and the chief source of all light and heat of the world. The sun shines down through ninety-three million miles of space through all kinds of air, temperature and air currents, and carries with it radiant heat.

Slowness of Man in Adapting Himself to the Obvious

It seems strange, knowing, as we have for thousands of years, nature's own method of heating the world by radiant heat, that we have not adapted it to our own use in an artificial way for the heating of our homes. Our forefathers came the nearest to it with the old open fireplace of wood logs. When those logs glowed or were sufficiently burned to be a mass of red incandescent live coals of fire, they gave off a very intense radiant heat, but the many objections to such a fire—the smoke, the ashes, the dust and dirt—have condemned it, and the enclosed stove and finally the furnace have come into general use.

The present method of convected heat for the home is most inefficient and unhealthy. By convected heat we simply heat up all the air of the room to a temperature of 65 or 70 deg. This is done by bringing heat a long way through pipes or flues, and there is much loss of heat in transmitting it. The hot air that is generated either from the furnace or radiators goes directly upward and fills the upper part of the room. There is a great loss of heat by this method due to the hot air cooling off as it comes

into contact with cold windows and walls, also escaping through windows and crevices. Then, too, from a health standpoint, when we have our room or all the air in the rooms heated up to, say, 70 deg., this expanded air is not best for breathing purposes, and it must be a powerful shock to the lungs to step from a warm room, full of hot air like this, out into zero weather. Some people are more vigorous than others, and what is a comfortable indoor temperature for the anemic is almost intolerable for the robust and healthy person.

Keeping the Body Warm and the Air Cool

The ideal method of heating our homes would be to keep the body warm and the air of the room cool for breathing purposes. This can best be accomplished by the use of radiant heat. As I have herein described it, radiant heat is the only heat that can be conducted through space without a mechanical device to convey it.

Radiant heat goes the way it is directed, just like light. Radiant heat is not affected by drafts. Radiant heat goes right through a heavy plate-glass window or a piece of ice. Radiant heat passes through the air without appreciably warming it.

Radiant heat goes until it strikes some solid, nontransparent body, and then it warms that body, which in turn gives off convected heat.

The laws governing radiant heat are alike in every way to that governing light. You would not think of stopping light rays from going in a certain direction with a piece of window glass, or of blowing it away with the draft from an electric fan.

Radiant heat is not a current of hot air coming from the radiant fire, the same as cool air from an electric fan. Quite the reverse; if there is any air current it is air rushing toward the radiants of the fire to supply it with secondary air, while the radiant heat waves are coming right out through the incoming air.

Will Register Little on Thermometer

There are no air currents produced by radiant heat. Radiant heat will register but a little on an ordinary thermometer, because the glass bulb of the thermometer filled with mercury is a good reflector and reflects the radiant heat away. By blackening the bulb of the thermometer with lamp black the black bulb will then absorb radiant heat and register very well.

Although nature's way of heating and lighting the world is by shining from above, and we have put our lamps above and reflected the light downward, we put our heating units on the floor and let the heat go up. If we could live on the ceilings of our rooms instead of the floors our coal shortage would be almost instantly relieved.

A radiantfire heater throws the heat right straight out along the floor line sideways and upward in a spreading fan shape, but it would be possible to direct the heat in other directions. If you would tip the heater forward most of the heat would be directed at the floor, or if tilted backward it would throw the heat upward in the room.

Would it not seem strange, and it is not at all impossible, to put a radiant heater up near the ceiling of the room and reflect the light downward? Perhaps some time in the future people will speak of hanging the heating fixtures; or perhaps we will have combination fixtures, not combination gas and electric fixtures, but combination light and heat fixtures, on the ceilings.

The present incandescent gas lamps give out and reflect down some radiant heat as well as light.

Going Outside to Get Warm

With radiant heat in the room you can throw your windows open and let the fresh air come in, and still the radiant heat will keep the body warm, because this heat is not affected by drafts. It has been a common phrase or saying for years, "Come in and get warm," but a clever salesman with one of the gas companies in New York revised this phrase by connecting up a radiant heater outside the gas office on the street and put up a sign, "Come outside and get warm." True enough, on a very cold day it is possible to stand in front of a radiant heater out-of-doors and get warm.

There is some mystery about radiant heat that even students and writers on the subject do not seem to fully understand. I have visited some of the best testing laboratories in the country and have consulted good authority, to find that there is no known instrument that will register radiant heat or no unit of measure for same. What may seem strange to many of you, but is nevertheless true, a gas radiant heater is the only gas heater known that positively separates the heat and products of combustion. The heat is absorbed by the radiants and thrown right out into the room where directed, and the products of combustion go upward and out through the chimney, if there is one. There is something magic about radiant heat, in that it will almost instantly penetrate through heavy clothing that wards off severe cold winds and it will quickly penetrate the soles of your shoes.

Radiant heat in a room is most agreeable to every member of the family, because one can adjust his position in the room to suit the amount of heat required to keep the body comfortable. Radiant heat diminishes inversely by the square of the distance, just as light does.

Radiant heat is not wasted. When it has spent its ray of radiant heat it warms the floor, the chairs, the person or other objects it comes in contact with, and then in turn heats the air of the room. Radiant heat will pass through a vacuum, and were it possible to have a vacuum tube as long as the room with radiant heat in one end of it the radiant heat would go through the vacuum without loss and be as intense at the other end as it was at the fire itself.

Why Thermos Bottles Are Mirrored

The reason why all vacuum bottles are covered with quicksilver on the outside glass, the same as a mirror, is if this was not done radiant heat would go right through the vacuum and heat the contents of the bottle.

If you wish to try an experiment try and get a vacuum bottle of clear glass, fill it with water and place it in front of a radiant fire. Place another one, if you wish, alongside or on top of a steam radiator. In trying this experiment with the vacuum bottle,

if you will fill the bottle with black coffee or some non-transparent liquid you will find it will heat up much quicker than with clear water, because some or a large part of the radiant heat will go right through the vacuum bottle and water. The same amount of radiant heat will go through the bottle and water that light would go through.

Radiant heat can be reflected like light. If you will place a mirror on an angle of 45 deg. in front of the heater the radiant heat will strike the mirror and reflect in a right angle from the mirror, the same as light. If you wish to know just how radiant heat is being distributed in a room, place a radiantfire in a perfectly dark room and note where the fire light rays are going. Radiant heat will go wherever the light rays go.

How the Gas Companies Are Helping the Nation

THE ALLENTOWN-BETHLEHEM GAS COMPANY, of Allentown, Pa., has the following employees now in the service of the Government:

Webster Herbster	Unknown
Edw. McLaughlin	Camp Meade
Theo. Pendlebury	Camp Ayer, Mass.
Roy Orner	Unknown
John W. Shanerberg, Jr.	Co. D, 4th Pa. Inf.
Thos. Shields	Camp Meade
Peter E. Stoudt	Co. D, 4th Pa. Inf.

THE SOUTHERN PUBLIC UTILITIES COMPANY has fifty-one of its employees away from their posts at the different branches. The following fourteen men from the Greenville, S. C., plant are now serving the nation:

Doris Huff	W. B. Rutledge
Charles Lockwood	A. W. Hinds
Grayson Hoke	A. W. Lockwood
Denver Miller	Carl Barton
W. F. Lachicotte	J. E. Hall
Harvey Welborn	W. E. Cason
Frank Blakeley	A. L. Shields

H. F. DIETZ, formerly of the Hickory, N. C., plant of the Southern Public Utilities Company has joined the colors.

THE FULTON COUNTY GAS & ELECTRIC COMPANY, of Gloversville, N. Y., has a few of its employees now doing military duty. Wallace McLaughlin is with Company G, 2nd N. Y. Infantry, and Harold Chartier, U. S. Engineers.

J. E. FULWEILER, formerly connected with the United Gas Improvement Company, and now an officer in the naval forces, is stationed on the U. S. S. James. His new address is permanently in care of the Postmaster, New York, N. Y. In a recent letter to the AMERICAN GAS ENGINEERING JOURNAL he states:

"I have never regretted my action in enrolling in the navy. There is always something doing of interest on board a ship, whether at sea or moored in harbor. Then the question of personal comfort is an important one. On board ship, my room is my home, and no matter where the ship may be, I can get in my own bed and have my personal belongings with me. Also steam heat and electric lights are a bit hard to rig up in a trench shelter or tent.

"On the other hand, the weather plays a bit more important part with us, and the winter weather here is about the poorest sort that has ever been invented. It is not so very cold as regards the temperature, but very raw and penetrating, and with rain that has a batting average of about 900.

"The winds, too, are generally high here, and an ordinary day would be a storm at home, and, when it really blows, we drop the hook and wait awhile. (Once, when we were here but a short time, one of our boats didn't, and now that boat is a memory.)

"I have been almost entirely out of touch with the gas world with the exception of an occasional letter from my brother and from Mr. Lane, of Point Breeze, and I surely would appreciate it to hear how much benzol and toluol some of my friends are now producing where none grew before, or how they got their town on the B.t.u. basis, or anything of interest.

"It is rather fortunate that one of my colleagues in the U. G. I. Company, has a boat in the same squadron. We are able to run around together quite a bit when in port.

"I haven't mentioned submarines, because what I don't know about them would fill a book, and what I think is not fit for publication."

THE COUNTIES GAS & ELECTRIC COMPANY, of Norristown, Pa., employees have responded rapidly to the nation's call, the following having already joined the colors:

Thomas B. Arnold	Headquarters Co., 2nd Pa. Artillery
Adrian T. Bertolette	Headquarters Co., 2nd Pa. Artillery
Sam Burns	Camp Meade
Russell Casselberry	Headquarters Co., 2nd Pa. Artillery
W. H. Clark	Battery C, 1st Pa. Artillery
Peter Gerber	Camp Meade
Victor L. Harley	Headquarters Co., 2nd Pa. Artillery
G. N. Highley	Camp Meade
Francis L. Jamison	Headquarters Co., 2nd Pa. Artillery
Joseph F. Jones	Aviation Corps
Ross Koons	Camp Meade
Wilfred Lukens	Camp Meade
M. H. Lutz	Battery C, 1st Pa. Artillery
Julio Marino	Camp Meade
Oscar Mohn	Camp Meade
Harry Naylor	Co. F, 6th Pa. Infantry
Dan Rastelli	Motorcycle Corps
Norman Sperry	Co. F, 6th Pa. Infantry

THE PEOPLES GAS LIGHT & COKE COMPANY, of Chicago, is displaying a service flag of 208 stars, but this will have to be corrected soon, as forty-two more of the company's men have joined the colors since the flag was made. The patriotic sipirit is strong at the Peoples company, and hardly a day passes but what one or more men resign in order to enter the service of Uncle Sam. Those who have gone to war within the last few days are: Edward Schott, R. E. Mulvey, A. Tucker, George Barlow, E. N. Johnson, J. Oskowki, O. A. Helgeson and John Del Monaco. That the gas company boys cannot put their former working place entirely out of their minds, even in the midst of war training and actual fighting, is indicated in a dozen letters from men in the

(*Continued on page* 34)

In Any Case Where Toluol Is to Be Removed Candle Power Standard Should Be Eliminated or Made So Low It Will Not Interfere With Operations*

War Only an Added Influence Towards Hastening an End Otherwise Desirable—Method of Estimating Influence of Toluol Recovery on Gas Quality—Economic Considerations

By R. S. McBRIDE
U. S. Bureau of Standards, Washington, D. C.

The removal of benzol and toluol from gas necessarily reduces the heating value and candle-power of the gas. The amount of reduction depends upon the quantity of these constituents originally in the gas, the thoroughness of washing, and the general character of the gas with respect to other heating and lighting constituents. In this paper it is intended, first, to present a summary of the more important conditions of operation which determine the probable effect of toluol recovery upon the quality of the gas supplied; second, to illustrate the method of estimating the probable effect in any particular case, and, third, to summarize certain general recommendations as to changes in standards that must be made in order that the recovery of toluol can be carried out effectively in a large number of localities. In this memorandum, changes of standards are considered only from the standpoint of toluol recovery. No consideration is given to any other factors considered which might properly in many cases make desirable a change of standards. Such matters would depend upon a number of factors not within the scope of the present discussions.

Summary of Present Standards of Gas Quality and Gas Company Operating Conditions

Both the heating value and the candle-power of gas are used in this country as a measure of the quality of the product supplied. Usually only one of these two characteristics is prescribed by ordinance or administrative ruling, but in some cases both are fixed. In cases where such standards have not been adopted, and the quality of the gas supplied is determined by the local gas company, it is of interest to know what quality of gas is being supplied. This information is presented below; for convenience of consideration the companies are classified according to the standard in force. Data are included for all American gas companies making 500,000,000 cu. ft or more of coal, water or oil gas per year, and for such other companies as have been recommended to the Ordnance Department for consideration by the sub-committee on coal tar by-products.

I. Gas companies in the following cities are expected to supply gas in compliance with the candle-power requirements as follows:

(*a*) *Requirements of 20 candles or higher:*

New York City (including the New York Consolidated systems, the Brooklyn Union Gas Company and the Kings County Lighting Company), 22 candle-power. (Permission has recently been given to change to a heating value of 650 B.t.u. at the same price or to any lower heating value standard if a proportionate reduction in price of gas is made.)

Philadelphia, Pa., 22 candle-power, fixed by a franchise contract with the city.

Des Moines, Iowa, 22 candle-power.

Sioux City, Iowa, 21 candle-power.

Omaha, Neb., 23 candle-power measured at the gas works or 21.2 candle-power measured at the city testing station and 600 B.t.u. heating value.

Charleston, S. C., 20 candle-power and 600 B.t.u.

East St. Louis, Ill., 20 candle-power (an old city ordinance requirement) and 565 B.t.u.

Northern Illinois cities supplied by Public Service Company of Northern Illinois, 22 candle-power (ordinance) and 565 B.t.u. (State standard).

(*b*) *Requirements of 18 candles:*

Detroit, Mich., 18 candle-power and 600 B.t.u

Lansing, Mich., 18 candle-power and 600 B.t.u. net heating value.

Los Angeles, Cal., 18 candle-power and 600 B.t.u. (most of the gas supply of this city is natural gas, which is not limited by these requirements).

(*c*) *Requirements of 16 candles:*

All cities of Massachusetts, 16 candle-power (fixed by State statute, but subject to some waiver for purposes of investigation by the State Board of Gas and Electric Light Commissioners. This board has very recently recommended to the State legislature a standard of 528 B.t.u.). The following Massachusetts cities are of interest in this connection: Boston, Brockton, Cambridge, Fall River. Haverhill, Lawrence, Lowell, Lynn, Malden, New Bedford, Pittsfield, Springfield, Worcester.

Nashville, Tenn., 16 candle-power and 600 B.t.u.

Jackson, Mich., 16 candle-power (20 candle-power for water gas) and 600 B.t.u.

Grand Rapids, Mich., 16 candle-power and 600 B.t.u.

Peoria, Ill., 16 candle-power and 565 B.t.u.

(*d*) *Requirements of candle-power less than 16:*

Minneapolis, Minn., 15 candle-power and 600 B.t.u.

Birmingham, Ala., 15 candle-power and 575 B.t.u.

St. Paul, Minn., 14 candle-power and 600 B.t.u.

II. Gas companies in the following localities supply gas in compliance with heating value requirements as follows:

(*a*) *Total heating value 600 B.t.u.*.

St. Louis, Mo. (This is a municipal requirement; the State

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requirement is 570 B.t.u.)

Baltimore, Md.	Tacoma, Wash.
Indianapolis, Ind.	Milwaukee, Wis.
Hammond, Ind.	Madison, Wis.
Peru, Ind.	Atlantic City, N. J.
South Bend, Ind.	Elizabeth, N. J.
Cedar Rapids, Iowa.	Jersey City, N. J.
Washington, D. C.	Newark, N. J.
Wilmington, Del.	Paterson. N. J.
Seattle, Wash.	Trenton, N. J.

(*b*) *Total heating values* 585 *and below.*

Denver, Col., 575	Chester, Pa., 570
Bridgeport, Conn., 575	Reading, Pa., 570
Hartford, Conn., 575	Wilkes-Barre, Pa., 570
New Haven, Conn., 575	Manchester, N. H., 565
Waterbury, Conn., 575	Chicago, Ill., 565
Portland. Ore., 570	San Francisco, Cal., 550
Ardmore, Pa., 570	San Diego, Cal., 550
Allentown, Pa., 570	Oakland, Cal., 550

Cities of New York State, 585. (Of these cities the following are of interest in this connection: Albany, Binghamton. Buffalo, Poughkeepsie, Rochester, Schenectady, Syracuse, Troy, Utica.)

III. The gas companies in the following cities have no requirements limiting the candle-power or heating value of the gas which they supply, but are reported to be supplying gas of candle-power and heating value as given below:

New Orleans, La., 22 candle-power and 600 B.t.u.
Jacksonville, Fla., 20 candle-power and 580 B.t.u
Atlanta, Ga., 19 candle-power and 600 B.t.u.
Richmond, Va., 18 candle-power and 590 B.t.u.
Pawtucket, R. I., 17 candle-power and 600 B.t.u.
Providence, R. I., 17 candle-power and 600 B.t.u.
Salt Lake City, 17 candle-power and 600 B.t.u.
Houston, Tex., 17 candle-power and 585 B.t.u.
Mobile, Ala., 15 candle-power and 600 B.t.u.
Portland, Me., 15 candle-power and 570 B.t.u.
Savannah, Ga., 575 B.t.u.
Battle Creek, Mich.
San Antonio, Tex

Method of Estimating Influence of Toluol Recovery Upon Gas Quality

As previously stated the quantity of toluol or benzol in the gas initially is a large factor in determining the quality of the gas both before and after removal of the toluol, since the conditions which make for the presence of large quantities of these aromatic hydrocarbons are the conditions prevailing during the production of high-candle-power and high-heating-value gases. In general, the quantity of toluol and other light oils present in water gas depends upon the amount of gas oil used in the production of this gas. Approximately 10 per cent of the volume of gas oil used can be recovered as crude light oil, and of this amount from one-fifth to one-sixth can be recovered as pure toluol. Coal gas made by any of the usual horizontal retort processes, which are the only processes of coal-gas manufacture requiring particular consideration in this report, usually contains about one-quarter to one-third of a gallon of light oil per 1,000 cu. ft., depending upon the character and treatment of the coal and the quality of the gas. From one-eighth to one-tenth of this light oil is recoverable as pure toluol.

For each 1/10 gal. of light oil removed per 1,000 cu. ft. of gas the total heating value is reduced by approximately 10 to 14 B.t.u. per cubic foot and the candle-power by 2½ to 3 candles. However, restoring part of the light oil removed, for example, enriching with the benzol fraction, may in some measure compensate for the loss in heating value and candle-power brought about by the initial washing. In fact, if a sufficient amount of additional benzol is available the candle-power and heating value can be restored substantially to the original values. (The increase in quality is about the same per unit of volume of benzol returned as was the loss on removal of the light oil.) However, this practice would not generally be practicable, since it demands the purchase of benzol or other enriching constituents to take the place of those constituents which are permanently removed from the gas. In estimating the loss of candle-power and heating value, the figures here presented are probably slightly higher than would correspond to the change in quality of gas at the customers since in distributing unwashed gas there is usually considerable loss due to condensation.

From these two generalizations and a knowledge of the initial candle-power and heating value of the gas it is readily possible to estimate approximately the influence upon the quality of the gas of recovering different amounts of toluol or of toluol and benzol. Such estimates are, of course, not exact, but they furnish an excellent guide for readjustment of standards in any case where this is necessary or for approximating the quantity of materials which can be obtained by washing the gas. The following examples will make clear the application of the data.

Example 1.—Assume water gas made from 4 gal. of oil per 1,000 cu. ft. and having an open-flame candle-power of 20 and a heating value of 625 B.t.u. About 0.4 of a gallon of light oils per 1,000 cu. ft. could be recovered from such gas with practically complete washing. If none of the benzol was returned to the gas the result would be a gas of about 575 B.t.u. and 10 candle-power. If the light oil were distilled and the benzol fraction were returned to the gas, the loss in heating value and candle-power would be perhaps one-half as great, and the result a gas of about 600 B.t.u. and 15 candles. In order to restore the heating value and candle-power to substantially their original figures, it would be necessary to add benzol to the extent of approximately 0.2 of a gallon per 1,000 cu. ft. of gas manufactured. From the 0.4 gal. of light oil originally obtained some 0.07 to 0.08 gal. of toluol would probably be obtainable on refining.

Example 2.—Assume carburetted water gas with 3 gal. of gas oil per 1,000 cu. ft. and assume a very high oil-efficiency so that the candle-power was 18 and the heating value 570 B.t.u. From this gas about 0.3 gal. of light oil, equivalent to perhaps 0.05 to 0.06 gal. toluol, would be obtained per 1,000 cu. ft. with commercially complete washing. The result of this washing would be a gas approximately 530 B.t.u. and 9 to 10 candles, which would be restored to 550 B.t.u. and about 12 candles if re-enriched with the benzol portion of the light oil.

Example 3.—A mixture of coal gas and water gas in about equal proportion may be assumed made from water gas for which 3½ gal. of gas oil were used to give 18 candles and 600 B.t.u. and coal gas of 580 B.t.u. and 15 candles. Such mixed gas would yield perhaps 0.3 gal. light oil per 1,000 cu. ft., and the average candle-power would be reduced by washing from 16½ to 8 or 9 candles and the heating value from 590 Bt.u. to about 550 B.t.u. Restoration of the benzol fraction would give a product of about 12 candles and 570 B.t.u.

Example 4.—A coal gas made from ordinary grade of gas coal to yield 10,000 cu. ft. of gas per ton is assumed to produce gas of about 14 candles in the open flame and of 585 B.t.u. From this approximately 0.3 gal. of light oil per 1,000 cu. ft.

of gas could be recovered; and from it 0.025 to 0.03 gal. of toluol per 1,000 cu. ft. would be available. The gas after washing would have approximately 8 candles and 550 B.t.u., which would be increased to perhaps 12 candles and 570 B.t.u. if the benzol fraction was restored.

In any of the above cases the net loss in heating value and candle-power might readily be reduced if some of the other constituents of the light oils, such as the solvent naphtha fraction, were also restored to the gas, or the loss in heating value and candle-power could be made less by operating the washing equipment in such a way as to accomplish only a partial removal of the light oils. In the latter case, if removal of only 75 per cent of the quantity of light oil readily obtainable were considered satisfactory this would make the losses in heating value and candle-power of only about three-fourths as great as above indicated, but, of course, it would also somewhat reduce the yield of toluol in about the same proportion.

It is probable that complete washing of the gas with restoration of the benzol in most cases will be considered advisable since the need for toluol is considerable and very little sacrifice of toluol yield can be allowed. But the demand for benzol is not so great and the restoration of the benzol to the gas might give results at first more satisfactory to the gas users than would the sale of this benzol with the slight reduction in total costs for the gas which might possibly be accomplished thereby. Especially might the restoration of benzol be necessary where a high candle-power standard has been in force, since otherwise the loss in candle-power would be rather greater than would be desirable at one time. In any computation, therefore, it is probably best to assume, unless other basis is known to be correct, that commercially complete washing of the gas would be necessary, and that the benzol fraction of the light oil, amounting to approximately one-half the total volume of light oil removed, will be restored to the gas.

Recommendations Regarding Standards for Gas Quality

From the estimates in the preceding section it is evident that much greater difficulty is met in complying with a candle-power requirement after removal of toluol or light oil than is encountered if a heating value standard is to be complied with. Because of this fact, it seems desirable that in any case where toluol is to be recovered the candle-power standard be altogether eliminated or be made sufficiently low, so that it will not interfere seriously with the proposed operations. Many other factors independent of toluol recovery make evident the desirability of eliminating candle-power requirements and substituting heating value requirements as the primary basis of gas measurement. Therefore, the war is only an added influence tending to hasten an end otherwise desirable.

In all cases where the candle-power has previously been below 18, it would seem that the elimination of the candle-power requirements altogether would be reasonable, although in any event it is expected that the company would supply a gas of at least 8 or 10 candles, which would be sufficient to care for the need of those customers who must use some portion of the gas for open-flame lighting. In cases where 18 or 20 candles or higher has been maintained regularly in the past, it might be undesirable to have the candle-power go below 12 to 14, unless open-flame lights were generally eliminated and a readjustment of the appliances of all customers were made wherever the change in quality might make this necessary. For all companies which have been complying with requirements of 18 candle-power or higher, an understanding might be reached as to the maintenance of at least 12 to 14 candles for such a period as might be necessary to accomplish a general adjustment to the new conditions.

When coal gas is supplied either alone or mixed with very small percentages of water gas it is impracticable to make a very rich gas, since the character of the coals available in most instances would preclude economic operation if a higher standard, either of heat value or of candle-power, must be maintained. For cities where only coal gas is supplied the standard could scarcely be higher than about 570 B.t.u., if practically complete toluol recovery is expected. Higher heating value standards than this would probably have to be modified for such gas supplied.

If water gas is manufactured, either alone or as a major constitutent of the supply, it is entirely practicable to make a gas of reasonably high heating value and candle-power initially, and have, after removal of the toluol, a heating value of 585 to 600 B.t.u. In each case it would be a question as to which procedure was the more economical; that is, whether it would be better to make the same quality of gas as had previously been supplied, and supply the customer with a somewhat lower product than formerly after the toluol had been removed from the gas, or to make the gas initially somewhat richer than before by the use of slightly more gas oil per 1,000 cu. ft., so that the product after washing would have substantially the same heating value as had previously been supplied. If the quality previously supplied was rather high, approaching the maximum of the range of quality, permissible for efficient operation, then any increase in the initial quality would obviously be undesirable; but otherwise an initial increase in quality, with subsequent washing down to the original, might be the best practice. Since the quantity of toluol available is largely dependent upon the initial richness of the gas which has been washed there is considerable advantage from the standpoint of the Government in having the richest practicable gas made initially; but, of course, in any case, the limits of economical operation must be clearly recognized, and conservation of oil might also be an important factor.

As a summary of these points the following suggestions are offered as desirable adjustments to facilitate the recovery of toluol:

1. Eliminate all candle-power requirements now in force, except for the cities where 18 candles or higher has been supplied, in which localities reach an understanding that at least 12 candles will be maintained for a period, say a year, during which time readjustments of appliances and substitution of mantle lamps would be accomplished to such an extent as to justify complete elimination of candle-power regulations.

2. For plants making coal gas (or practically only coal gas), let the heating value standard be from 550 to 570 B.t.u.

3. For plants making water gas, either alone or as a major constituent, let the heating value standard be 570 to 600 B.t.u. monthly average total heating value, the

adjustments being made between these limits according to the economic conditions of operation.

In order to show the number of companies that would be affected by these several recommendations, the following tabulation of the companies above listed is prepared. This tabulation does not take account of any unusual local conditions which might affect some of the cases materially. The kind of gas manufactured is also indicated: W = water gas, C = coal gas, O = oil gas, M = mixed coal and water gas, B = by-product coke-oven gas, and N= natural gas.

I. Localities in which no change of standard will probably be needed and no serious change in the quality of gas supplied will probably result:

Chester, Pa.—W + B	Schenectady, N. Y.—M
Reading, Pa.—W	Troy, N. Y.—W
Wilkes-Barre, Pa.—W	Utica, N. Y.—W
Ardmore. Pa.—W	Poughkeepsie, N. Y.—W
Allentown, Pa.—W	Syracuse, N. Y.—M
Portland, Ore.—O	Binghamton, N. Y.—W
Manchester, N. H.—M	Rochester. N. Y.—M
Hartford, Conn.—M	Chicago, Ill.—W—B—N
Bridgeport, Conn.—W	San Diego, Cal.—W + O
New Haven, Conn.—M	San Francisco, Cal.—O
Waterbury, Conn.—W	Oakland, Cal.—O
Denver, Col.—M	Houston, Tex.—W
San Antonio, Tex.—W	Pawtucket, R. I.—M
Savannah, Ga.—W	Providence, R. I.—M
Jacksonville, Fla.—M	Battle Creek, Mich.—M
Richmond, Va.—M	Portland, Me.—M
Atlanta, Ga.—M	Salt Lake City, Utah—M
New Orleans, La.—W	Mobile, Ala.—M
Albany, N. Y.—W	

II. Localities in which a candle-power standard may have to be abandoned, but with no serious change in the heating value of the gas supplied:

Lynn, Mass.—M	Fall River, Mass.—M
Boston. Mass.—M	Haverhill, Mass.—W
Brockton, Mass.—M	Springfield, Mass.—M
Lawrence, Mass.—M	Malden, Mass.—M
Lowell, Mass.—M	Birmingham, Ala.—M
New Bedford, Mass.—M	Waterloo, Iowa—W
Pittsfield, Mass.—M	Peoria, Ill.—M
Worcester, Mass.—M	Nashville, Tenn.—M
East St. Louis. Ill.—W + N	Cambridge, Mass.—M

III. Localities in which slight change in heating value regulations may, perhaps, be required, but in no case probably more than equivalent to 5 per cent of the present value. (The six cities marked (*) have candle-power standards which should be eliminated also.)

Indianapolis, Ind.—B + W	Buffalo, N. Y.—M
Tacoma, Wash.—C + O	Milwaukee, Wis.—M
Seattle, Wash.—B + M	Madison, Wis.—W
Trenton, N. J.—B + N	Cedar Rapids, Iowa—M
Paterson, N. J.—W	St. Louis, Mo.—M + B
Newark, N. J.—M	Baltimore, Md.—W + B
Jersey City. N. J.—W	Hammond, Ind.—M
Elizabeth, N. J.—W	South Bend, Ind.—M
Atlantic City, N. J.—W	Peru, Ind.—M
Washington, D. C.—M	Wilmington, Del.—W
*St. Paul, Minn.—W	*Grand Rapids, Mich.—M
*Minneapolis, Minn.—M	*Jackson, Mich.—M
*Detroit, Mich.—M + B	*Los Angeles, Cal.—O + N

IV. Localities in which high candle-power regulations should be changed or eliminated in order to permit operation on a heating value basis; the reduction in heating value of the gas delivered would probably be a considerable percentage of the present value. (In the case of Lansing and Omaha a lower heating value than now in force would also be necessary.)

New York City—M	Charleston, S. C.— W
Omaha, Neb.—W	Des Moines, Iowa—W
Lansing, Mich.—M	Sioux City, Iowa—W
Philadelphia, Pa.—M	

Northern Illinois cities supplied by Public Service Company of Northern Illinois—M

How the Gas Companies Are Helping the Nation

(*Continued from page* 30)

service printed in the current issue of the *Advance Club News*, the employees' paper of the company. The letters come from France, Canada and the different camps throughout the United States. Those from France are from Hardy Weedon, son of the assistant advertising manager of the company, and from F. H. Gay, a former employee, now a member of Company A, 13th Railway Engineers. The following is an abstract from Private Gay's letter to John Clancy, of the Sixty-third Street store, dated Oct. 28, 1917:

"Well, John, I suppose you read the papers in Chicago and have heard all about the experiences of the regiment. You can get more out of the papers than I am allowed to write, but I will tell you this: We were the boys that carried the U. S. flag through London and got one of the grandest receptions you ever saw. We ate dinner in the King's garden and were showered with flowers by the women and girls. We were also the boys that came nearly seeing the bottom of the Atlantic. I suppose you read all about that. I sure held by breath that morning. We landed in France at night, and the people were out in their nightshirts to greet us. We are not the best dirlled men you ever saw, but I guess all the rest of the American troops feel kind of jealous of us, as we are the only regiment in active service and the first ones under fire.

"We sure get some reception from our friends, John, and it is pretty exciting at times. We have no cabs on the engines over here, and when they start after us they drop balls from the sky; then it is time to get out of the way. We have to crawl under the engine to get our rest. Some of the holes are big enough for a swimming pool."

THE CONSOLIDATED GAS COMPANY. of New York, recently flung a service flag to the breeze containing 1,048 stars in front of offices on East Fifteenth Street, to honor that number of the company's employees who are now in the army and navy. The flag is 15 ft. wide and 24 ft. long, and can be seen plainly from Union and Stuyvesant Squares.

During the ceremonies which marked the flag raising many of the older employees and officials of the company recalled a similar ceremony in the early part of the Civil War. The gas company employees at that time formed themselves into a unit under the command of Colonel Charles Roome, who was then president of the corporation. When the unit reached Washington and was accepted by President Lincoln, Colonel Roome was designated a brigadier-general.

In addition to names already published in this JOURNAL, the Consolidated also has the following employees in the naval and military service:

J. Rivers Genet.....Naval Reserve

Joseph Geoghegan.....Naval Militia
George Gilberti.....National Army
G. A. Gillespie.....Naval Reserve
Joseph Glynn.....9th Coast Artillery

J. Glynn.....22nd Engineers, N. Y.
John Gormley.....Army
John J. Goggins.....10th Infantry
C. A. Gould.....22nd Engineers, N. Y.
James Gowan.....Navy

E. B. J. Graham.....Infantry
J. Grant.....12th Infantry, N. Y.
John Grant.....Army
J. W. Green.....Navy
Charles Grimm.....National Army

John Grimmer.....71st Infantry
J. Gross.....Regular Army
A. Gustafson.....National Army
J. F. Hanrahan.....Army
H. Hardiman.....Navy

J. Haggerty.....Navy
W. Harris.....22nd Engineers, N. Y.
G. L. Harrison.....9th Coast Defense
H. Harrison.....9th Coast Defense.
W. Hartman.....Army

C. Hauser.....Regular Army
William W. Hayward.....7th Infantry
Felix Pier. Heald.....National Army
Phillip Hellriegel.....69th Infantry
S. Hennefield.....National Army

Lawrence Hennessy.....Navy
F. Henningsen.....12th Infantry
Arthur Herron.....7th Infantry
H. Higgins.....National Army
J. W. Hillebrecht.....National Army

W. C. Hillman.....National Army
J. Willett Hoad.....7th Infantry
C. Hohmeister.....1st Field Artillery
Jacob Holder.....National Army
E. J. Homan.....Navy

Alf. N. Hotaling.....1st Field Artillery
Harry B. Howell.....National Army
G. Hyland.....22nd Engineers, N. Y.
Theo. Ismay.....Engineers
Joseph Jackson.....Marines

Emil Jahoda.....9th Coast Defense
Edwin H. Jones.....7th Infantry
Joseph Jones.....Navy
E. C. Jordan.....71st Infantry, N. Y.
B. Kaiser.....47th Infantry, Regular Army

Peter Kane.....69th Infantry, N. Y.
H. Katz.....National Army
William Keatley.....Marines
Arthur J. Keeling.....7th Infantry
L. Keller.....Navy

THE PUBLIC SERVICE CORPORATION, San Antonio, Texas, comprising the former traction company and the former gas and electric company, has eighty-seven blue stars and three gold ones standing out upon its service flag, hung in one of the windows facing on Houston Street. The gold stars indicate employees of the company who have died in the service of their country.

W. T. WATERS, former advertising manager of the Atlanta Gas Light Company, of Atlanta, Ga., and editor of *Here We Are*, arrived in Atlanta on November 27 wearing the shoulder bar of a first lieutenant in the Field Artillery. He had but a short time to stay, having been ordered to report to his regiment at Fort Logan, Houston, Tex., by December 15, but spent most of it in the company's offices, greeting and being greeted

W. T. WATERS
FIRST LIEUTENANT

by his friends in every department. Mr. Waters entered the officers' training camp at Fort Oglethorpe three months ago, after many weeks of hard work on the draft exemption board. He was graduated far up in the A list of first lieutenants, and his associates are confident he will make an enviable record as an officer. Mrs. Waters, who held down her husband's place as advertising manager during his absence in camp, will continue in that capacity.

THE MILWAUKEE GAS LIGHT COMPANY, of Milwaukee, Wis., reports a 98 per cent membership of its more than 800 employees. The reason for lacking the 100 per cent is that many of the street laborers of the company are Italians, and already belong to the Italian Red Cross, to which they pay $4 per year.

THE GLOUCESTER GAS LIGHT COMPANY, of Gloucester, Mass., through its manager, William H. Coffin, recently filed an application, which has been granted, to become an authorized agent for the thrift stamps and war saving stamps as one of the many ways in aiding the Government.

Increasing Tin Roof Service

"Tin-roof paint would try a saint" sometimes, admits the Joseph Dixon Crucible Company, of Jersey City, N. J. Tin to-day is not what it used to be in weight and metal. The acids, gases and dust in the air, etc., are greater than what they used to be. Or it may be the tin was not properly put in painting condition to receive the paint, according to directions on paint label. There are sometimes failures. Again, there are remarkable instances of long service. In its monthly house organ, *Graphite*, for November, 1917, the Dixon company reproduced a roof testimonial telling of twenty years' paint service. This concern also distributes an illustrated tin-roof booklet of much interest to factory owners and the general trade.

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A Spectacular Justification of Private Ownership

With the exception of some additional burdens war-time conditions have imposed upon them, the Consolidated Gas Company and the Brooklyn Union Gas Company, serving New York City, have gone about their routine work of rendering public service this year just as efficiently and just as adequately as they went about it last year. The problem of coal supplies throughout the whole utility field has been more than perplexing; oil supplies are a problem that seems almost unsolvable; getting in an adequate stock of appliances is not as simple as it used to be. But these problems have apparently not been sufficient to throw the New York companies off their gait. They have gone about tending to their business in such manner that the consumer can detect no difference whatever from what he has been accustomed to.

Then came the real test. The territory they served was hit with the lowest temperatures in history. Added to this there was prevalent the nearest approach to a coal famine the city had ever experienced. There was a run without precedent on gas heaters. Hardware stores, etc., sold more gas-jet heating devices in a few days than they had sold in all the years they had handled them. The number of cooking ranges that were employed for house-heating purposes in individual dwellings probably exceeded by far the total number of real gas heaters in use in many good-sized cities.

Yet, to all outward aspects at least, the New York companies did not wince under the burden thrust upon them. Not one cubic foot of gas was denied any consumer, industrial or otherwise, and the sale of gas heaters was carried on uninterrupted by the gas companies.

There was no hitch. There were no shortages either in gas or in heaters.

The New York companies have emerged from the test with the caliber of their managements severely tested and proved completely adequate.

It is seldom that such tests result in this manner. It is certain that no improvement could be made, since the job was handled to the letter.

By an odd coincidence talk of municipal ownership had again come to the fore in New York City but a few months previously. It was dragged in by a journalistic demagogue who has made political capital out of such a cry for many years past.

It is unlikely, however, that anyone concerned with the matter gave very much thought to the possibility of its going through.

In the first place, there is no considerable local sentiment in its favor. The gas and electric services in the city have been found satisfactory and ade-

quate by its people. The attitude of the companies towards their patrons has won favor.

Then, too, there is the question of finances. The City of New York has about all it can handle in the way of financing in building transportation lines.

But an interesting possibility is revealed in the thought of municipal ownership of the New York City gas utilities. What would have happened in the crisis just past if they had been so owned?

Let us analyze the leading article in this week's issue.

The outstanding feature of the narrative is "foresight." This word appears time after time throughout the article. And foresight is a feature conspicuously absent in any municipally directed project in New York City. We have only to look to the transit situation to appreciate this.

The rate of growth of the city is and has been relatively a matter of record. The geographical situation and its relation to transit is likewise no mystery even to a layman. And the carrying capacity of existing transit lines has always been fairly susceptible to estimate.

Yet, when the original subway was built the existing lines of transit were hopelessly inadequate to meet the burden put upon them. Before the new subways were even decided upon the load on the old and other transit lines was vastly beyond their capacity. The crowding conditions more than justified their being termed brutal. There is small evidence of foresight on New York's experience with transportation.

Outcropping throughout the whole narrative are evidences of one-man authority; not necessarily in each case the same one man, but a particular man assigned to a particular task and with sufficient authority to enable him to discharge that task in the most direct manner.

From the first selectman of the New England town up to the President of the United States our system of government is based on putting a leash on the powers of any one man. Such a leash would have been fatal to the handling of a situation such as that with which the New York companies were confronted.

Adequate plant equipment undoubtedly played a large part in the success of both companies. But their respective organizations played a much more important part. Loyal employees, in whom the spirit of co-operation and public service is deeply implanted, more than any other factor made the result possible. Contrast such organizations with organizations in which employment is obtained through political preferment or by civil service, and in which promotions are possible only by passing examinations on theories; organizations in which, of necessity, each employee would be more or less in a rut.

With municipally owned gas companies, the people of New York City would have fared badly in the recent emergency. It is true, there would have been a considerable ado over the failure. There would have been investigations and the responsibility perhaps fixed. Such authorities would be removed and new ones put in their places. But that would not have brought back to life those who would have perished as a consequence; would not have replaced the hours of labor lost through illness or compensated for the tremendous amount of human suffering entailed. It is fortunate for the people of the city that its gas companies are privately owned.

The Cost of Gas for House Heating

No conscientious gas man is at all hesitant in conceding that, on the basis of primary fuel costs alone, gas, as compared to coal, is an inexpensive fuel for house heating. The great stress is laid upon its convenience, but to the best of this JOURNAL's knowledge no value has been set upon that convenience. That it has a real dollars and cents value the AMERICAN GAS ENGINEERING JOURNAL is convinced. That this value would be high, if it was possible to compute it, is equally beyond question.

Take, for instance, a twenty-four-hundred-dollar-a-year office worker. He owns a house in the suburbs and commutes to his work in the city. He works, say, eight hours a day. He heats his house with coal.

One servant would seem to be the limit of help available to this family. And the only condition under which one servant could be sufficient in an eight-room house, with even a family of only two or three, would be one in which the owner's wife helped out with the work. As a consequence, it must be presumed that the hard work of keeping the furnace going would fall on the man.

Under the best of conditions this man's day, directly or indirectly connected with his work, must be long. Three hours would seem a minimum to allow for travel to and from, an hour, say, to lunch—the greater part would be spent at his desk—and eight hours of actual work would consume half of the twenty-four hours in the day. Add two hours for attending the furnace, an hour more for his breakfast and dinner, and he has just one hour each day to do as he pleases if he is to get eight hours of sleep.

It is quite generally conceded that to maintain his best efficiency a worker must have a distinct break in interest between each day's work. There is no break of interest revealed in this man's days, and even on Sunday his mind is not free from responsibilities,

liberated from the need of doing a particular task at a particular time.

And this man's efficiency determines his earning power. Tending to his coal furnace undoubtedly tends to lower it, consequently detracts from his earnings. In this case undoubtedly he is paying something for his heating beyond the mere cost of his coal.

Contentment in his domestic life is another factor in promoting a man's efficiency. The temperaments of both he and his wife may be naturally ideal. But nothing can warp them more effectively than drudgery. And the drudgery of the furnace affects both.

Health is a third factor in working efficiency. The demoralizing effect of work in the home after a day of work in the shop is well recognized in the industries. The safety organizations of our great industrial corporations interest themselves considerably in freeing the wage-earner from washing the dishes and tending the children. This makes for better health on his part and fewer accidents. And tending the coal furnace is a more disagreeable, disturbing and monotonous task than either of these.

We could go on for columns citing various factors. Anything that impairs a man's efficiency lessens his earning power, consequently costs him something in dollars and cents. The convenience of gas heating undoubtedly has a real money value.

Concerted Action at Last

This JOURNAL takes considerable satisfaction in noting in this week's news columns a resolution adopted at a recent meeting of the National Gas Appliance Manufacturers' Exchange deciding to lay before every official body at Washington the gas companies' situation regarding fuel shortage; also requesting that the Fuel Administration and the Food Administration investigate and, after confirmation of the utilities statements, advocate under Government recommendation the use of gas as against any other fuel for domestic cooking purposes, restaurants and hotels, and insure an adequate coal supply.

We have in previous issues suggested and indorsed such action, but we are surprised that the initiative should have had to have been taken by a strictly manufacturers' body. It is disappointing that no body more strictly related to the gas companies themselves should reap the praise which is sure to come from such action.

The logic of the manufacturers' resolution is perfect, and lack of inspiration is the only reason we can suggest why the same logic did not emanate from other authoritative bodies, especially related to the commercial branch.

However, now that it is assured that the information will be brought to the attention of the proper authorities, it is up to the industry as a whole to back up every word of the resolution and when the coal supply is guaranteed to double its efforts to push the use of gas for all purposes where coal will be conserved thereby.

Concerning Salesmen

It is difficult sometimes, when we are at the receiving end, to regard the salesman as anything else than a nuisance. The company that employs him, however, if it is alert and modern, esteems him as an investment.

In some quarters the commercial end of the gas business has been permitted to get out of hand. Difficulties that are not real, in that, had not vision been lacking, they could have been avoided, have been allowed to assume a false importance. The wisdom of continuing merchandising efforts has been questioned. In some cases the trend has gone farther. Merchandising has been put on the black list. The question arises: What is to be done with the salesmen?

Surely they are not to be tossed aside. The least competent among them has cost the company something to develop. And there is the comforting assurance—for the salesman if not for the company—that some interest is lying in wait to snap up the man we let out. There is an element of doubt as to our being able to get him again when the time comes when we want him. Some task should be found to keep him on the payroll, if only as a provision for the future.

In every territory there is small-consumption business that we would like to have on our lines. Despite the fact that we realize that getting gas into a house merely for occasional cooking or lighting often proves the stepping stone to the sale of other equipment, we have neglected this business because in our quest for the bigger things we did not have time to attend to it.

There lies one solution for the salesman problem. Take those we have, if we are worried about our mounting outputs, off the easy tasks and put them on the hard ones.

Seek out the working man who is using kerosene for lighting through habits formed in the days when he didn't have the money to buy gas-lighting fixtures. He has the money to buy them now. Get him to install them. Perhaps later his earnings may go back relatively to where they were before. But he will continue to light by gas. It will be cheaper. It is the initial investment that has held him back hitherto.

Get the one and two light installations on the line. Put in as much effort in selling a hot top as has hitherto been devoted to selling a gas range.

Merchandising Gas

Clow Sales Organization Holds Four-Session Convention

Successful Meeting Culminated at Banquet at Which W. E. Clow, Jr., Announces His Enlistment in the Navy

A goodly part of one session of the 1917 convention of the Clow Sales Organization, which was held at the general offices of the company in Chicago, Dec. 27 and 28, was devoted to the Clow Gasteam Radiator.

Considerable success of several of the Clow salesmen with the gasteam radiator won much applause from the entire assembly. After these inspirating discussions, all of the salesmen were united in a firm determination to increase their own radiator sales and to spread its possibilities for increasing profits to their customers.

The R. U. V. water sterilizer, which is an electrical apparatus manufactured by this company, under patent rights leased from the R. U. V. Company, of New York, was discussed during another entire session of the convention.

This apparatus, although manufactured for somewhat over a year by the Clow company, has recently been perfected and has just been turned over to the general sales force.

The two other sessions of the convention dealt chiefly with plumbing specialties of interest mainly to that fraternity.

The Standard Sanitary Manufacturing Company presented some interesting movies showing the process in the manufacture of porcelain enameled iron ware, vitreous ware and brass goods, which proved both educational and entertaining.

A banquet held at the Union League Club culminated the convention with an interesting program.

W. E. Clow, Jr., surprised the sales force at the very last moment by making the announcement that he had enlisted in the United States Navy as a second-class seaman. After a training of three months, beginning with Jan. 2, in the Naval Training Station at North Chicago, he will begin active service. Mr. Clow's patriotism is worthy of much praise, as he is thirty-three years of age, and consequently not subject to draft, and has such a promising commercial future before him.

K. S. Clow is serving the Hoover Food Administration in Washington, so that W. E. Clow, Sr., alone is left with the entire business.

Methods that Insure Success in Merchandising Gas

Making the Town Merchants and Plumbers Your Agents in Selling Appliances — Taking Psychology Into Consideration in Selling Industrial Equipment — Building Up the Installation and the Gas Bill by Degrees

By AN EXPERIENCED GAS ENGINEER AND MANAGER

There are more angles to gas merchandising than appear on the surface. It may seem difficult to say anything new on the subject — so much has already been said. Yet how much of it is based on actual observation, and how much of it on the part of some writers has been merely an amplification of something some other writer has already told? How much of it in short is the product of what they have seen and how much is the product of what they have read. There is a great deal to be told yet in regard to merchandising of gas. In this article the writer will endeavor to tell some things that have never, to his knowledge, been told before.

Manufactured gas companies most always maintain commercial or appliance departments, but the natural gas companies, which do so are very few, and, in the writer's estimation, the omission is one of the gravest mistakes made by the natural gas operators. There is always a cry of poor pressure, etc., especially during the winter months, and in many cases this can be traced to improper gas-burning appliances. In the average city or town where natural gas is distributed, every hardware store, furniture store, plumber, etc., carries some sort of appliances.

No attempt made to standardize. The merchant's main idea is to buy the appliance he can purchase the cheapest and get the most money for. Anything and everything will do, as long as it will burn gas.

There are so-called gas stoves sold that are nothing more than a lot of sheet iron thrown together with a few cheap burners. Efficiency is absolutely impossible.

Heating stoves are of every size, type and make. Many of them are made by irresponsible manufacturers.

The result is the consumer does not have the gas company's experience and advice, and becomes dissatisfied, then come complaints of poor gas, poor service, etc., and when the complaints are traced to their source, they show nothing but poor and improper appliances.

Boston Gas Output Larger

The December output of the Boston Consolidated Gas Company totaled 627,577,000 cu. ft., an increase of 7.6 per cent over December, 1916.

Chicago Street Lighting Report

The annual report of the Department of Gas and Electricity of Chicago for the year 1917 indicates that 9,600 flame arc lamps were replaced by 600 candle-power gas-filled lamps, making a total of 15,300 gas-filled, 600-candle-power lamps, 8,900 gas-filled 100-candle-power lamps, and 6,100 incandescent lamps now in operation. A total of 35,451 street lights were operated in 1917.

Robinson, Ill., Company Authorized to Increase Rates

The Wabash Gas Company was authorized to increase the rates for gas service in Robinson, Crawford County, Ill., in an order issued by the State Public Utilities Commission.

Savings in Standardization

War conditions have brought before everybody the subject of conservation. To the gas consumer as well as the gas company this means considerable.

But how can a consumer conservate with poor and inefficient gas-burning appliances?

We have heard the tale of Mrs. So-and-So's bill being only so much, "and she has so many in her family, while there are but two in ours and our gas bill is over twice as much, and they do more cooking," etc. We know the story by heart. But when we get busy and investigate, we usually find that Mrs. So-and-So either has more efficient appliances, or has been educated how to use gas efficiently as well as economically. One is a satisfied consumer, the other a dissatisfied one.

Have you ever thought what you could have saved if you had standardized a few years ago on gas burners, gas ranges, water heaters, etc.? Did you ever investigate why some other gas company's gratuitous work amounted to practically nothing, and, besides, they had satisfied consumers and no agitation whatsoever? If you have, as a rule you will find that they standardize, not only in adopting appliances, but in methods of selling them and educating the consumers in how to use them economically.

Gas companies are not selling gas or appliances, they are selling "Service." Therefore, no matter how good your gas is, how can you give the consumers service unless the gas-burning appliances are efficient and economical, and the consumer educated how to use them? Therefore, in order to merchandise our gas and appliances, let us first consider the gas, and then the appliances through which it is consumed, as well as methods of bringing these before the consumers and prospective consumers.

Being Right at the Start

The first essential is to see that we have gas which is clean, well scrubbed, washed and condensed and properly purified. Then we must have our mains and services of sufficient size to be able to bring to the consumer gas enough to meet the maximum demand.

We must see that we maintain a steady pressure at all times, as we well know from past experience that a variable pressure immediately causes trouble and reduces the efficiency, even of the best of appliances.

Our distribution system must be laid so that steady pressures can be maintained at all times. That means that when appliances are once adjusted to their maximum efficiency they will stay there and need little or no regulation.

The writer has seen an entire street in some territories where there was not one burner properly adjusted and where the mantles were practically black, due to an excess of gas, through excess pressure.

Poor gas, irregular pressure, small mains and services mean dissatisfied consumers, and that means trouble from all angles.

If you want to merchandise gas, see that the gas is clean, well distributed and that the service given is the best obtainable.

If your condensing, washing, scrubbing and purifying apparatus is too small, get busy and make it large enough.

Unless you have good and clean gas you will be unable to sell it properly.

No matter how much you do in the appliance department, the gas comes first. You cannot sell gas unless you have the best appliances, and you cannot sell the best appliances and give service unless you have the best of gas.

In the natural gas end it must always be remembered that the consumer must have service first. He must have a steady flow of gas and a steady pressure, otherwise he has trouble and he will then take up with your competitor.

Putting in the Right Meter

The next apparatus we must give some study to before we can merchandise our gas and appliances is the gas meter. Don't expect to get 400 cu. ft. of gas per hour out of a gas meter which has a capacity at 5/10 in. of 160 cu. ft., and try to give service. Rather have a meter a little too large than too small.

Do not buy the meter which is the cheapest, but buy the meter which will first give you the largest amount of gas with the least absorption. Then a meter which will cause you little or no trouble; one that is strong and durable, and which will stand the test of time. You would not send a boy to do a man's work, but how many times have you set a small meter to do a large meter's work.

After you have good gas, good distribution service, unless you have a meter of sufficient capacity, all the rest amounts to nothing, as they will work against each other.

Before setting a meter, ascertain what will be the maximum consumption, or, in other words, what will the consumption be during the so-called "peak load." Then set a meter that will meet this.

We well know that some gas companies have established a rule that for a five-room house this meter, for a seven-room house that meter, etc.

But they lose all track of the fact that the family in the five-room house, besides the lighting and gas range, will have a water heater, and possibly a number of heating stoves, and in many cases many other appliances.

Therefore, ascertain from the consumer when he or she applies for a meter what they will use gas for, and see that a meter of sufficient size is installed.

If you overload your meter you immediately shorten its life and bring on trouble and expense.

House Piping

Don't expect to give good service where the piping is either too small or trapped.

Adopt fixed rules, such as established by the American Gas Institute and other associations. Don't do, as one gas company did, let the consumer decide what size pipe he wants.

I know of cases where a full-sized cabinet range had been connected with ⅜-in. pipe, and then the consumer complained about poor gas.

Improper piping has caused about as much trouble as poor appliances to the natural gas operators, because, in many cases, they tried to do nothing to establish rules and supervise the piping.

In many natural gas companies they laid the service to the curb and then the consumer had some plumber do the rest. The plumber had no restrictions to follow, and the result was he put in the smallest piping he could and charged as much as he could.

Some of the examples of house piping done by plumbers in the natural gas fields and seen by the writer are absolutely *rotten* — no other term seems adequate—and there was no wonder at all that the consumers complained.

Therefore, to help merchandise your commodity, remember you must also see to the house piping, so that you can give to the consumer the service he is paying for and is entitled to.

Burners, Mantles and Fixtures

Have you done anything in regard to standardizing gas burners; have you tested different makes and types of gas burners and adopted the best ones? By this I mean, have you adopted a line of burners which will give the consumer the highest efficiency with a minimum usage of gas? Have you purchased gas burners with the subject of "quality" in view, or have you purchased gas burners solely because you could buy "quantity"?

You well know, in every city, town and village, every store, even five-and-ten-cent stores, sell burners.

Have you sold any of this so-called "junk"? Or have you investigated and adopted a line of burners which will give efficiency? If so, you have followed the first step for merchandising.

Have you investigated which make of mantles are the best and will give the consumer, dollar for dollar, the best value? Have you adopted a line of mantles manufactured by a firm whose name stands for the "acme" of quality, and adopted this line, or have you bought any and every kind of mantle? Remember, when a gas company merchandises it is not so much selling of appliances, but selling gas through these appliances.

After you have adopted the proper burners and mantles, you must educate your consumers that when they buy burners and mantles from you that these will give them the highest efficiency and are the most economical. You must educate your consumers that the cheap burners and mantles they purchase from the different stores mean inefficiency, use more gas, etc.

How is this to be accomplished? The best means of all is a small sticker on your monthly gas and appliance bills. They will bring quicker and better results than anything else. Then plan your campaigns.

In your town or city remember you have high school pupils. There are also the pupils attending business colleges and other schools, all of whom make excellent solicitors and work solely on a commission basis.

After you have your prospective solicitors, don't send them out just to sell burners and mantles, but educate them first how to install and adjust them, and also educate them so they can talk on this subject. Don't just start them out, but rather spend a day or two or an evening or two lecturing to them, so that they know something about what they are selling.

If you are unable to do so yourself, Mr. Manager, possibly your new business manager can, and if not, don't forget the traveling man.

Fixtures

Gas fixtures come hand in hand with gas burners and mantles. There are all kinds, sizes and types, and to carry everything and anything in this line means a large outlay of money, and usually a loss.

Look into the different lines and adopt a leader line, consisting of brackets, pendants, two and three light fixtures, etc. If you have a plant large enough you can adopt a second leader line. But do not attempt to buy everything that comes along. Remember, you must standardize in fixtures as well.

See that the brackets and fixtures you purchase are strong, durable and well constructed. See that the keys are properly made, and don't buy the cheapest, but adopt a medium and stick to it.

Cheap fixtures mean trouble to you. One call of your troubleman on a leak will cost you more than the profit you made on the gas for a month.

Hang a set of fixtures in your display room and place burners on them, and have the gas connected, so that the prospective purchaser can see what they look like under operation. You can also purchase a few domes and inverted fixtures, but just as samples.

But for the special consumer, who desires something out of the ordinary, use your catalogs.

I have seen gas companies that had a line of gas fixtures and burners that would do the average fixture manufacturer justice, but it was impossible to sell them except at a sacrifice, and gradually they became shop worn and had to be sold for less than cost.

A good and substantial line of fixtures will always find a ready sale rather than a line of fixtures elaborately constructed and designed. The main thing a fixture needs is good lines and substantiability.

Now about your house-piping campaigns. Many will say we cannot do this without having trouble with the plumbers in our city. Have you ever tried to make arrangements with them? If not, try it. But meet them on an even plane.

The writer has known many managers whose success was originally started with the plumbers.

Agree to put in a line of fixtures in their display room, and maintain a certain price. Have arrangements as to house piping. Then make arrangements about them buying mantles from you.

Show them how they can buy their mantles from you in fifty lots at a price lower than they can buy them for. They will gladly accept this. It has been tried time and time again, and makes the plumbers feel kindly. Most plumbers do gas fitting, and if they are properly handled will prove a big asset in merchandising your gas.

Then come your department stores. Did you ever try to place a line of your burners in them, including mantles and fixtures? Well, if not, try it and see how quick they will accept and handle them on a percentage basis. It means no outlay of money to them, and they will accept readily. Some gas companies have even done this with other stores to a marked degree of success.

Glassware

Glassware has always been a problem to most gas companies. The breakage is always high, then, again, the change of designs, etc., have also caused trouble. It has been found that no gas company can carry everything and anything in this line. It means a loss, at the very best.

If you have a hundred different pieces, usually there is something a little different which the prospective purchaser desires. Therefore, adopt a good substantial line of glassware.

Glassware, by the way, which is constructed to give light, not to reduce it.

Do not buy this so-called "gingerbread" glassware. Fancy glassware is all right, but there are few places where it can be sold.

Where the consumers desire glassware for artistic effects, use your catalogs.

Remember you are selling gas and service, and the only reason you must

sell appliances is because through them your service is sold. Therefore, especially in glassware, you are only selling a side line.

Gas Stoves

Adopt a good line of gas stoves. Don't carry every make of stove on the market. Don't carry three or four lines. Through actual test find the gas stove which will give the best results under your operating conditions.

Test stoves for efficiency in baking, cooking, then compare them with regard to construction and design. Adopt one line as a leader, and out of this line adopt a leader.

If your conditions are such that it would be advantageous to adopt a second line do so. But forget everything excepting that you are looking for a gas stove which will give efficient service and be economical, as well as simple in operation. Don't buy quantity, but quality. Don't buy because the traveling man is a good fellow, or you like the house he represents. Buy what you know through actual test is the best.

Adopt a one and two as well a three-hole hot plate, but don't have more than one make. Do the same with laundry stoves, etc.

After you have adopted your stoves, etc., connect them up in your display room so that every stove can be seen by the consumer under actual operation.

You may say, well, we don't care to sell hot plates or single oven gas ranges. We know you don't, but there is a class of consumer that cannot afford anything else, and has use only just for that, therefore see that he gets the best.

To merchandise gas stoves in order to sell service, there is no better way than with cooking demonstrations. You must educate your consumers. That has been lacking with many gas companies in the past. They were like the plumber or furniture store. They sold the stove and then let the consumer worry along with it.

The consumer knows very little. You must teach them. How can you bring them closer to the gas stove than with cooking demonstrations?

You want to standardize on the kind and make of stoves you sell, therefore, under actual operating conditions, you must demonstrate to your consumers. If you do not have the space to hold demonstrations in your office or display rooms, rent a place.

If you do not employ demonstrators, you can procure one from the gas-stove manufacturer.

Then place stickers on the gas bills announcing the coming dates of the demonstrations; put banners on your wagons, etc., and use some newspaper advertising.

Hand-bill advertising will do little or no good.

Give prizes of heating stoves, gas irons, portable lamps and, as a grand prize the last day, a gas range or two. It creates interest.

If you employ demonstrators, don't forget the different church and social clubs are always anxious to hear demonstrations of this kind.

One of the main troubles of the gas business has been the lack of education of the consumers. There has been too much setting the stove and letting the consumer worry along alone.

You must teach the consumer as well as prospective consumer how to operate his or her gas stove economically.

Issue little booklets, which you can obtain from the stove manufacturers gratis, which have recipes in them.

Have baking contests once in awhile. Let them know you are alive and up and going, and when you hold your demonstrations see that the consumer as well as prospective consumer who attends gets a little talk of how to take care of the appliances.

Have them ask questions.

During your demonstrations you can each day issue a page of recipes, and a binder the last day.

When you have sold a gas stove see that the consumer is instructed either by a demonstrator or an employee educated for that purpose how to operate the appliance. You know there is something more than lighting the gas and placing on the stove the pot or pan, or the roast or pan in the oven. See that the consumer is shown how to broil and toast, etc. Then how to adjust the air mixers and keep the stove clean.

Don't have a demonstrator who does not have a personality. I have seen demonstrators who could never gain the confidence of the consumer.

We know that some consumers think they know, and these must be handled so that they *will* know after the demonstrator leaves.

Then don't forget to have a call made in a week or ten days again to see how the consumer is getting along.

There are many little wrinkles you can show them, and gradually you will gain that prestige which will help you merchandise your service and standardize throughout your entire district.

Heating Stoves

Standardize heating stoves as well as everything else. Stop selling inefficient heating stoves. Test a few and find out for yourself which will give the most heat at the least cost of gas.

Many so-called heating stoves are nothing but a pipe with a few holes drilled in it, and a little polished copper and iron around it.

Be sure you have an efficient line of heating stoves. Then have campaigns the same as you did with the lamps and burners. You can use the same class of help.

The writer knows of one gas-stove concern which sold in four months 30,000 heaters in a city of 100,000 inhabitants, using nothing but boys from high school, business colleges, etc., with some newspaper advertising. You can do the same. A little sticker in the right season on your gas bills help a great deal, too.

Water Heaters

Adopt a good tank heater, and be sure you have the best. There are all kinds of so-called tank heaters on the market, but in order to ascertain which is the best you must find out through actual test.

Don't buy a cheap tank heater. A good tank heater is worth all you pay for it.

The writer knows of one gas company that purchased about a thousand tank heaters solely because they looked good and were about $3 cheaper than any others. They sold them very fast, and were very well pleased, until one day there was a fire in the city, which necessitated the turning on of the high pressure on the water system, and the copper coils on these heaters were so thin that they burst, and it cost the gas company a neat penny in damages.

Automatic Water Heaters

Adopt a good automatic water heater as well as a storage system. Don't have one of each make on the

(*Continued on page* 44)

News of the Gas Industry

Laclede Company Also Pays Bonus on Earnings in Addition to Giving Christmas Bonus

The board of directors of the Laclede Gas Light Company recently announced that in addition to the Christmas bonus of a week's salary, which was distributed to each of its 1,800 employees, as was noted in the Jan. 5 issue of the AMERICAN GAS ENGINEERING JOURNAL, an additional bonus would be granted employees based on the earnings of the company for the year, on Feb. 20.

Last year this bonus amounted to 10 per cent of a year's salary. It is not expected to be so large this year.

Michigan Company Puts 50 Cent Meter Charge in Effect

The Central Gas Company has notified its customers at Mt. Pleasant and Clare that until the time when coal drops to at least $4 per ton a rental of 50 cents a month will be charged the consumer for their meters, a clause in the company's franchise preventing a higher rate being charged for gas.

Chicago Budget for Gas Department Cut

The finance committee of the Chicago city council, in trimming down the budget for 1918 to meet the estimated resources of the city for the coming year, recommends deep cuts in the appropriations for committees and departments on gas.

From the appropriation for the committee on gas and oil, which last year was $17,000, the finance committee recommends a deduction of exactly $17,000, leaving that committee nothing. From the gas litigation appropriation of $193,000 for 1917 the finance committee recommends a deduction of $93,000 for 1918. A deduction of $8,000 is further recommended in the appropriation for the public service department, which last year was $50,275. These recommendations, however, are still to be acted on by the council as a whole.

Explosion at Flemington, N. J.

On Sunday evening, Dec. 30, 1917, about 6.40 o'clock, Flemington, N. J., was shaken by an explosion which later turned out to be the purifier house of the New Jersey Northern Gas Company.

Many were soon near the scene, north of the Lehigh Valley station, and the building was seen to be in flames. The blaze soon died down and it was found that the purifier room, separated from the main plant by a brick wall, had been wrecked by the explosion. The three walls of this part were scattered in all directions and the main building wall buckled in to a dangerous point.

It is said only one man, named Basho, was in charge during the evening and he was at the opposite end of the large building when the explosion came.

A large force of men were put to work at once, and gas was forced into the pipes Tuesday afternoon, and on Wednesday morning the gas supply was normal again. Much credit is due Superintendent Powers for getting a supply of gas to his customers so quickly, when the great damage to the plant is considered as well as the bitter cold weather.

Columbia, Mo., Company Asks Increase

J. L. Hornsby and W. M. Fitch, St. Louis attorneys, appeared in Jefferson City before the public utilities board recently for the Columbia Gas Company and asked that the rate for gas there be changed from $1.35 to $1.75 for small consumers and from $1.20 to $1.60 for large consumers. The attorneys explained that $1,000 paid to President Smith, of the company, had not been included in the estimate given before the board two years ago when the rate was raised. They also said that if the rates were raised Columbia would still be paying no more than Kirksville and Independence, towns of much the same size.

First Organized Step Taken to Petition Washington Authorities for Coal by Appliance Manufacturers' Exchange

After a decidedly earnest meeting held Dec. 10, 1917, the National Gas Appliance Manufacturers' Association drew up the resolution which follows, and decided that a copy of this be sent to all the Federal Government offices and bureaus in any way connected with the industry. The resolution, which states the necessity of conserving coal and the ability to save that coal by use of gas, logically demands that immediate action be taken to supply the public utilities with sufficient coal for gas-making purposes. It follows in full:

RESOLUTION

Adopted at the meeting of the

NATIONAL GAS APPLIANCE MANUFACTURERS' EXCHANGE

December 10, 1917

Whereas, The conservation of coal has become a subject of national importance, and one of the most serious problems undertaken by governmental agencies operating in assistance to war making powers and to the promotion of economies in general industries; and

Whereas, It has been demonstrated that the use of gas for domestic uses, particularly in cook stoves, effects an enormous saving in coal by reason of the fact that, on a conservative estimate, it requires three times as much coal burned in a cooking range to do a given amount of cooking as it would require to make sufficient gas to do the same amount of cooking; and

Whereas, The only medium whereby this saving of coal can be insured is through the public utility companies manufacturing such gas for public use in every city and town in the United States; and

Whereas, By reason of the difficulty in securing coal in large quantities, and also on account of the enormous increase in the cost of production of gas, the use of gas as against coal is not being promoted,

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Merchandising Gas

Methods That Insure Success in Merchandising Gas

(*Continued from page* 42)

market. One good substantial line of different sizes is ample.

Use gas-bill stickers in season for this advertising. Then a circular letter to different prospects now and then will help. But don't forget your plumbers.

There is where they are always very anxious to deal with the gas company. Working arrangements can be made with them.

I know of a number of companies who sell the line of tank and automatic water heaters to the plumbers at a given price, and the plumbers in turn connect them up at so much per foot, under the supervision of the gas company. In turn, a heater or two on display in the show room of each plumber helps a lot. It will help you to standardize, it will keep out all these so-called water heaters, and make your plumbers boosters instead of knockers.

Arrangements can also be made with plumbers in regard to gas ranges with a marked degree of success.

Portable Lamps

We have touched upon the main appliances, and let us now consider portable lamps.

These need cautious buying. In fact, unintelligent buying of portable lamps will cause as much trouble as in the case of gas fixtures. Carry a small line, which will sell from $8.50 up to $15, complete with hose and burner. You might have a few a little higher than this, but not many. The writer's travel throughout the country has always shown that portable lamps within this range always found a very ready sale. For these prices, neat designs can be purchased and still quality obtained.

Domestic Appliances

Under this heading come gas irons, waffle irons, etc.

In waffle irons you have very little choice, as it is merely a side appliance, but in the gas iron you have a gas-burning appliance which is worth a great deal to the average housewife.

There are many gas irons on the market, but it is surprising what a big difference there is in actual working results. Get samples of gas irons and test them.

Try them for heating, for consumption, etc.

The writer has seen some gas irons that would be red hot at the point and cold, or practically so, on the base of the iron; also irons that were constructed so that it was impossible to iron lace and ruffles with them on account of the construction of the iron.

There are many points to look after, but test and try the irons and then adopt one. Use the same material for soliciting of gas burners, mantles, heating stoves, etc., and if you arrange things properly you can have a campaign force going all the time.

Display Rooms and Show Windows

Arrange your fixtures, burners, lamps, etc., by themselves. Don't back up a number of gas ranges against a wall and then hang fixtures over them. Have them separate. Keep the fixtures together, with the burners, etc., by themselves. Try to arrange your show rooms so they look neat. Connect your burners up, as well as fixtures, so that the consumer and prospective consumer can see your appliances under actual operating conditions.

Many companies have a rack built with either felt or some other dark material as a background, and on brackets arranged at regular intervals the different types of burners and glassware are displayed. Have a few chairs where your customer can sit down.

Connect up a line of gas ranges so that you can show the consumer what you can do. Have connections for a gas iron and a hot plate. Have a tank and heater connected to a basin, also your automatic heaters. Use a little of the gas you are trying to sell.

Dress your show windows weekly. Have them neat and not overcrowded. Create interest, and have a given time every evening for your burners and windows to be lighted. Show the people what you have as neatly as you can. Don't have your office and windows after office hours looking like a morgue.

Employees

Alone you could not run your company. You need employees, and it must be your desire to get the best you can.

As a rule they are not experienced gas office employees, so educate them. Have bi-monthly employees' meetings, and talk to them yourself, Mr. Manager or Mr. New Business Manager; if you cannot do so, don't forget the traveling men who come to see you. As a rule they know every detail of the commodities they are selling. They can talk to your employees as to their construction, their superiority and uses. Have your fitters and helpers, as well as your street main and service foremen, there, too.

Have the works superintendent tell them how gas is made, etc., so they know something about it. It will save you time, trouble and expense if you do. Teach them all what a gas meter is and how it registers. Teach them about ranges, burners, mantles, stoves, etc. Have your demonstrators, if you employ them, give talks on cooking, broiling, etc., and the operation and care of a gas range, water heater, etc. Then they will know what they are talking about.

If you have some employees who don't attend, get rid of them. They are only dead wood, and either think they know or don't care to know.

Place a small commission on everything for your employees, so that they have something to work for. Give this commission even to the helpers and fitters, as well as street main men. It helps immensely and you will be surprised how many burners, ranges, water heaters, etc., they can sell. I know of one manager who had one street main foreman who sold 152 gas ranges in three months to the foreign element he belonged to during evenings. And solicitors had never been able to even get anything from them. A small bonus helps.

Prices

Do not sell your appliances for cost, excepting to plumbers, etc. Have a fair margin of profit, so that the commercial department will pay for itself, and at the same time bring a fair margin of profit and enable you to give a fair bonus.

Advertising

You can always do some newspaper advertising during campaigns,

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but, on the other hand, is being curtailed; and

Whereas, The public utilities companies, due to these difficulties of manufacture and to the increased cost, are operating on a very small margin, and in many cases at no net profit, and have petitioned, almost universally, for an increased rate on gas;

It Is Resolved, (1) That the Exchange will lay these facts before the appropriate official bodies at Washington and urgently request immediate action be taken to insure the public utilities companies an ample supply of coal for gas-making purposes.

(2) That the Fuel Administration and the Food Administration at Washington and in the various States be requested, after confirming this claim of greater coal economy in the use of gas as against any other fuel for cooking purposes, to advocate its use by families, restaurants and hotels.

(3) That the Exchange express its approval of, and pledge its support to, the effort to secure a reasonable increase in the rate charged for gas, and that a committee be formed for the purpose of co-operating with the public utility companies to this end.

Upon motion, duly adopted this 10th day of December, 1917.

A. A. AINSWORTH,
Secretary.

Pacific Gas Company Seeking Authorization for Bond Issue

Announcing that it will spend $2,700,000 during 1918 for the development of its business and for extensions to new consumers, the Pacific Gas & Electric Company recently filed with the railroad commission application for authority to issue $3,000,000 of its general and refunding 5 per cent gold bonds at not less than 85 per cent of their face value. According to the petition, the company intends to expend $1,500,000 for electrical equipment and extensions, $1,000,000 for its gas department and $200,000 for miscellaneous purposes.

In addition to the construction authorized for 1918, the executive committee of the Pacific Gas & Electric Company has authorized $1,402,866.50 of expenditure as of Sept. 30, 1917. The new construction consists of an extension of the Wise tower line, $533,450; the installation of new equipment at the Potrero Gas Works, $408,946.50: construction of new gas works in Fresno, $445,470, and surveying a double tower line in Colusa County, $15,000.

The company's petition says it expended from Sept. 1, 1915, to Sept. 30, 1917. The new construc- Aug. 31, 1917, $4,317,879. It seeks to use the receipts of its proposed bond issue and two earlier issues of a total of $5,000,000 to reimburse its treasury for past and proposed expenditures.

Higher Rates Asked for at Savannah, Ga.

Petitioning for the right to increase the gas rates in Savannah, Ga., the Savannah Gas Company recently addressed a communication to the Georgia Railroad Commission.

Through the company's attorney, Judge S. B. Adams, the petition was sent in time for consideration at the meeting of the commission on Jan. 8, but as fifteen days must be allowed for the notification of all those concerned in the matter it will not come up for a hearing until Jan. 23.

In discussing the question, John W. Golden, vice-president of the Savannah Gas Company, said that the company is forced to this step not from any desire to increase the rates, but because an increase is actually necessary if the company is to meet its bonded indebtedness. The cost of the coal used has increased 300 per cent, he said, in the last year, and the oil used has increased 200 per cent in cost in two years. As these are the principal articles needed in the manufacture of gas, it is impossible to continue operation without some advance in the cost to the consumer, he declares, and the additional expense of increased wages to operatives must also be met. Such an advance as the company will ask the railroad commission to authorize, Mr. Golden said, is contemplated only for the period during which the present high cost of fuel and other operating expenses continues, and the company looks forward to returning the price to its present basis as soon as conditions again justify it.

The price of gas in Savannah at present is $1.10 for the first 10,000 cu. ft. or fraction of this amount, with a descending scale for the consumption of larger amounts. A dollar a thousand is paid for the next 20,000 cu. ft., 90 cents for the next 20,000, and 80 cents a thousand for all in excess of 50,000 cu. ft. The advance that will be asked for of the railroad commission is 10 cents a thousand.

This will work a very slight hardship, Mr. Golden points out, on the individual consumer, but in total will approximate $28,600 for the gas company, offsetting to some extent the increased cost of production, which in a single year has amounted to $78,252.

MR. GOLDEN'S STATEMENT

As a complete statement of the gas company's point of view, Mr. Golden offered the following:

"There has been an abnormal increase in our operating expenses during the past two years due to the increase in cost of fuel, oil, labor and other commodities entering into the manufacture and distribution of gas, such prices at present having increased 100 per cent and over since 1916.

"Our contract for coal for the year 1918 will increase the cost of this item alone $44,829, and oil for the same year will show an increase cost of $33,423, a total increase in these two items of $78,252 over the year 1916.

"This company has viewed with increasing alarm these rising costs, which have now reached a point where, in order to continue the high quality of service which this company is rendering the people of Savannah, it is necessary to devise some means of increasing our revenue in order to partly offset the effect of the high prices upon its earnings.

"We had hoped to so develop our business and reduce our costs as to be able to continue our present charges, but costs have advanced so rapidly and out of proportion to anything that we can do to counteract them that the only recourse is to obtain some relief. This relief we hope to obtain by adding after Feb. 1, 1918, to consumers' bills each month a surcharge of 10 cents per thousand cubic feet, which would amount to approximately $28,600 for the year 1918.

"This surcharge to remain in effect only until such time as the prices of materials entering into the manufacture of gas become normal."

Merchandising Gas

Methods That Insure Success in Merchandising Gas

(*Continued from page* 44)

but gas-bill stickers bring excellent results, demonstrations also, but educated employees bring more than anything else.

INDUSTRIAL APPLIANCES

We have left industrial appliances for last, as it is a distinct department by itself. If you have a plant large enough to employ a special industrial man, employ a good one. It will pay you.

Don't expect to get a high-class man for $100 per month. One good industrial fuel man will bring in as much business in a month as twenty-five solicitors.

Install a line of industrial appliances such as candy furnace, forge, soldering-iron furnaces, small metal furnace, etc. Have them connected ready for use with proper gas and air connections.

Handle your industrial business in sections; for instance, candy makers as one, packers as another, machine shops as another, etc.

Newspaper advertising will be worthless in this department, but the best to begin with is a few circular letters, then a personal visit or two, then a demonstration to each section, namely, line up your candy makers, and have an evening set aside, and invite them to attend a demonstration, then have your industrial man explain the furnace to them, and, if possible, prepare a batch of candy.

It interests them. One demonstration will do more than a dozen personal calls.

Always remember the Japanese proverb, "A look is as good as a thousand words."

When you get one order, see that the proper furnace is installed and installed right, as well as operated right.

Always remember in merchandising in the industrial fuel department one satisfied consumer is the best advertisement you can have to procure others.

If you cannot afford to employ a special industrial man, you can easily employ special industrial men for a given time—men who make it their business to travel from plant to plant.

These men are, as a rule, very good men, and thoroughly experienced and worth all you pay them.

Don't try to load up a consumer's plant all at once. After you have sold and installed one appliance, and it is working, let him operate this one before adding another.

Never lose sight of human nature in this department.

More companies have failed in the industrial fuel department solely because they started out by loading up the consumer with everything he could use gas for, and what was the result? Probably never before has he seen a gas bill over $5, and here comes his first bill of $100 or more.

He immediately begins to see nothing but the $100 gas bill, and forgets everything else.

I know of one newspaper solicited by the gas company, and it gave an order to install gas for everything, even a small gas-fired steam boiler.

The manager of this paper never saw a gas bill over $7 per month in his life, and when he received the first month's bill of $234 he immediately ordered all the appliances out, and became very unfriendly to the gas company.

All the talking in the world about what it was saving, etc., did no good. All he talked about was the high gas bill.

No amount of persuasion did any good.

About a year later this gas company employed another industrial fuel solicitor. He managed to install a small metal furnace in the newspaper's plant again, and then waited sixty days, and within fourteen months' time had all the apparatus back again and some more. The editor and manager were satisfied, even in face of the fact that the gas bill was over $300. Merchandising in the industrial fuel field must be done in stages, rather than all at once.

In merchandising for industrial fuel, carefully study each and every prospective installation separately. Always remember that there are no two cases alike. A high-grade industrial man must study all the time; he must investigate all new appliances and methods, as the advance of this branch of the gas business has been very fast and covers a very vast field.

New Rates for Athens, Ga.

Rodney C. Wilson, manager of the Athens (Ga.) Gas Light & Fuel Company reports that the petition for increased rates which came up before the Railroad Commission of Georgia was granted, just as petitioned for Dec. 13.

The unique feature of the petition was that with the petition a resolution from the Chamber of Commerce and the city asking that this petition be granted was presented.

Needless to say this had great weight with the commission. The petition was based on increased operating expenses, due to high prices, although most stress was laid on the high cost of coal, a feature which at this time is easily understood by the majority of people. The rates at present are as follows:

$1.70 for the first 5,000 ft.: $1.50 for the next 5,000 ft.; $1.30 for the next 10,000 ft.; $1.10 for the next 20,000 ft., and all over 40,000 at $1, with a minimum charge of $1.

The previous rates were $1.45 for the first 5,000, with a slide, from then on, making the increase approximately 17 per cent, with the minimum raised from 50 cents to $1.

This is a corrected listing of rates, regarding which a misstatement was made in the Dec. 29 issue of this JOURNAL, page 607.

Brooklyn Company's Gas Franchise Tax Reduced

Justice Leander B. Faber, in the Supreme Court in Brooklyn, signed an order reducing the franchise valuation of the Brooklyn Union Gas Company from 1910 to 1913, inclusive. The application of the gas company to reduce the franchise tax assessment had the approval of Attorney General Merton E. Lewis and Corporation Counsel Lamar Hardy. The amounts of the reductions are as follows: 1910, from $16,500,000 to $12,629,246; 1911, $17,850,000 to $13,128,746; 1912, $16,380,000 to $12,713,498; 1913, $16,380,000 to $14,731,081.

THE NORTH SHORE GAS COMPANY of Illinois has been granted permission by the public utilities commission to increase the rates for its gas service from $1 per thousand cubic feet to $1.15, effective Jan. 1, 1918. This company serves a number of small towns and villages which are suburbs of Chicago stretching from Evanston to Zion City along the shore of Lake Michigan.

Coal Gas Plants Should Save Ammoniacal By-Products

The following letter regarding the most vital subject of saving ammoniacal by-products from coal gas manufacture has been received by this JOURNAL. It is reprinted in its strongest form, that is in full:

UNITED STATES FOOD ADMINISTRATION

WASHINGTON, D. C.

January 2, 1918.

AMERICAN GAS ENGINEERING JOURNAL,
New York City.

Gentlemen: There are urgent reasons for augmenting in every way possible the supply of ammonia during the year 1918 in order to comply, as far as possible, with the War Department's requirements, and of the refrigeration industry and other essential uses of this chemical.

Therefore, every coal gas plant not already equipped, particularly those which consume more than 5,000 tons of coal per annum, should immediately investigate the possibility of saving its ammoniacal by-products, and the Division of Chemicals of the Food Administraton will be very glad to put them in touch with concerns which will join with them, if necessary, in financing the additional equipment required.

I am sure that many of the men interested in such plants have sons in service, and believe it will only be necessary to call their attention to the fact that they are in a position to put ammunition in the hands of their boys, in order to evoke their co-operation. Any prominence that you may be able to give to this situation will be much appreciated by

Yours very truly,
U. S. FOOD ADMINISTRATION,
(Signed) Per Charles W. Merrill,
Division of Chemicals.

THE AMERICAN GAS COMPANY announces that the stockholders will be given the privilege of subscribing at par to an issue of 3,000,000 ten-year 7 per cent convertible gold bonds. Such bonds as may not be taken by stockholders will be offered by three local bond houses. The proceeds will be used to complete construction of three new plants and other work, which is expected to yield $450,000 per annum in net profits.

Rates Increased at Bristol, Va.

On Dec. 1 the Bristol (Va.) Gas & Electric Company, a subsidiary of the Cities Service Company, put into effect an increased gas rate. This company is now charging $1.25 per thousand cubic feet whereas formerly it had a sliding rate which began at $1.25 and graded down to $1.

The Bristol company has also abolished discounts on bills paid before the 10th of the month, and after Jan. 10, 1918, an extra charge of 10 per cent will be added to bills paid after the 10th of the month. In announcing the new rates the company said: "We regret exceedingly the necessity of discontinuing the practice of allowing a discount on gas, but we are forced to do so for the present time until such time as conditions again become normal."

Personal Notes

ELIAS A. LONG, editor of the *Journal of Acetylene Lighting* from 1899 to March, 1914, died Dec. 24, 1917, at the home of his daughter in Sac City, Iowa. Mr. Long had many friends in the natural and artificial gas fields, due to their close alliance with the acetylene field.

CHARLES DURBIN HAUK, special representative of the commercial department for the Peoples Gas Light & Coke Company, of Chicago, Ill., died at his home, in West Lombard, Ill., on Dec. 13, 1917, after several weeks' illness. Mr. Hauk for many years has been well known in the gas industry of the country, having at one time been president of the National Gas Light & Fuel Company, owners and constructors of the Springer process. Mr. Hauk was born at Cincinnati, Ohio, sixty-nine years ago. He became interested in the manufacture of gas at an early date, and was president of the National company until its interests were acquired by the United Gas Improvement Company, after which he became connected with the National Gas & Water Company. Later Mr. Hauk went to Philadelphia and was active in the perfection of the Hastings process for the development of soft coal gas making apparatus. After severing his connections with this company Mr. Hauk retired to his farm at Lake Chautauqua, near Jamestown, N. Y. On Oct. 1, 1912, he became identified with the Peoples company of Chicago, and during the last five years made an innumerable number of friends both in and outside of the company.

G. A. STRAIN, formerly general manager of the gas department for the Helena (Mont.) Light & Railway Company, one of the J. G. White Management Corporation properties has recently been promoted and will have charge of five gas plants in the East operated by the White corporation. Mr. Strain has been in Helena about ten years.

S. A. WINCHELL has resigned his position as commercial agent of the Northern Indiana Gas & Electric Company, South Bend, Ind., to accept the position as assistant manager of the South Bend Supply Company. Mr. Winchell came to South Bend from Burlington, Iowa, where he was connected with the gas company there in the same capacity. During the six years he has lived in South Bend he has made many friends, who wish him success in his new position.

J. E. POINGDESTRE, after serving twelve years as manager of the Marysville, Cal., branch of the Pacific Gas & Electric Company, recently resigned. He is succeeded by E. C. Johnson.

E. C. JOHNSON, superintendent of the Pacific Gas & Electric Company at Marysville, Cal., has been named manager of the company, succeeding J. E. Poingdestre. Mr. Johnson will now assume the duties of both offices.

THE APPLETON OIL & GAS COMPANY'S capital was increased from $5,000 to $20,000 at a meeting of the directors at the office of John M. Balliet, according to an announcement recently made. The stock is to be divided into 4,000 shares at $5 a share instead of 5,000 shares at $1 a share, as was the case under the former capitalization. W. W. De Long, general manager of the company, was instructed to visit the oil fields of Texas within the next three weeks and make preparations for drilling. Officers of the company are as follows: John M. Balliet, president; Martin Weyenberg, vice-president; Walter Blake, secretary; W. J. Konrad, Jr., treasurer.

THE BEMENT GAS COMPANY recently incorporated at Terre Haute; capital, $50,000; to maintain and operate pipe lines for gas; directors, A. Bruce Bement, Ira E. Rogers, Henry W. Moore.

THE ALLENDALE OIL & GAS COMPANY, of Allendale, Ill., has notified Secretary of State Emerson, of Illinois, that the corporation has been dissolved.

Societies and Associations

THE NATIONAL COMMERCIAL GAS ASSOCIATION, formerly at 61 Broadway, New York City, has moved its headquarters to 128 East Fifteenth Street, Room 536.

THE NEW ENGLAND ASSOCIATION OF GAS ENGINEERS will hold its forty-eighth annual meeting on Wednesday and Thursday, Feb. 20 and 21, 1918, at the Copley-Plaza Hotel, Boston, Mass. Papers on the following subjects are being prepared: "Effect of the War on Gas Lighting," "The Coal Situation," "Benzol Recovery," "The Latest in Verticals in New England," "The Latest in Water Gas Plant in New England," "Gas Commercialism" and "An Electric Gas Meter." The annual dinner will be held on Wednesday evening, and the members are requested to notify the secretary, N. W. Gifford, in advance how many tickets they will want. Applications for membership should reach the secretary before Feb. 19.

THE ILLINOIS GAS ASSOCIATION will hold its fourteenth annual meeting in Chicago, at the Hotel Sherman, on Wednesday, March 20, 1918. The usual two-day meeting with banquet and entertainment will not be held, but instead the program will be condensed into one day, with a morning session from 10 a. m. to 12 m., an afternoon session from 2 p. m. to 5 p. m., an informal supper at 6 p. m., costing about $1.50, and an evening session after the supper, adjourning at 10 p. m. The following papers are being prepared for the meeting: "Some Effects of the War on the Gas Industry" (author not selected); "The Force of the Printed Word," by F. M. Lester, Chicago; "New Uses of Industrial Gas," by C. H. Kallstedt, Chicago; "The Value of Statistics," by S. B. Cushing, Chicago; "Gas Service Throughout the State," by F. D. Fletcher, Springfield; "Coke Ovens," by A. H. Harris, Jr., Joliet; "Remuneration of Salesmen," by E. J. Stephany, Aurora; "Keeping Meters Within Allowable Error," by J. H. Gumz, Aurora; "Do You Believe in Gas Lighting?" by C. A. Luther, Chicago, and "Rates and Rate Making," by J. M. Spitzglass, Chicago. Only a limited number of advance copies will be printed, and members who desire to prepare discussions are requested to write the secretary, Horace H. Clark, at once for papers.

THE ILLUMINATING ENGINEERING SOCIETY, Philadelphia Section, held a joint meeting in conjunction with the Franklin Institute and the Physics Club, of Philadelphia, on Thursday evening, Jan. 10, at 8 o'clock, at the Franklin Institute, 15 South Seventh Street, Philadelphia. A paper by Herbert E. Ives, Ph.D., physicist, United Gas Improvement Company, was read entitled "Physics of the Welsbach Mantle." The lecture dealt with the nature of radiation, with special attention to selective temperature radiation. The radiation from various oxides and oxide mixtures was discussed in detail, and the behavior of the ordinary gas mantle elucidated. The lecture was illustrated by experiments and lantern slides. The Welsbach company furnished an exhibition illustrating the manufacture of mantles.

THE ILLUMINATING ENGINEERING SOCIETY, New York Section, held a meeting on Thursday evening, Jan. 10, in the Engineering Building, 29 West Thirty-ninth Street, New York City, at 8.15 p. m. L. B. Marks, chairman Lighting Legislation Committee, presented the "Code of Lighting School Buildings" in abstract. C. B. Snyder, superintendent of school buildings, Department of Education, city of New York, discussed the practical application of the code. The usual a la carte dinner was served at Healy's restaurant, at 6.15 p. m.

WESTERN UNITED GAS & ELECTRIC COMPANY'S income statement for the nine months ending Oct. 31 shows gains in gross earnings, net income and surplus, despite increases in operating expenses and interest charges.

Construction Notes

H. Koppers Company Awarded the Providence Oven Contract

The Koppers Company, of Pittsburgh, announces that the Providence Gas Company has awarded to them a contract for the construction, at Providence, R. I., of a battery of forty Koppers gas ovens for the manufacture of illuminating gas and of metallurgical and domestic coke. A less descriptive item regarding this installation appeared in the Jan. 5, 1918, issue, page 16, of the advertising section of the AMERICAN GAS ENGINEERING JOURNAL. The president of the Providence Gas Company, John R. Freeman, one of the most prominent engineers in the United States, made a detailed study and inspection of all the different types of coal gas plants in America before making his decision to adopt the by-product oven.

The novel feature of the installation will be the heating of the ovens by means of producer gas manufactured in an outside plant of mechanically operated producers, using coal as fuel. The use of producer gas for heating ovens will release all the coal gas made in the coke ovens for distribution in the gas system. Construction has already been started on this plant, and plans have been made to commence delivering gas from the new plant sometime during the fall of 1918.

Permanent Dallas Gas Line Near Completion

Mayor Lawther, of Dallas, Texas, recently received a letter from W. P. Gage, general manager of the Lone Star Gas Company stating that permanent construction of the pipe line to the Fox field in Oklahoma would not be completed until about Jan. 15.

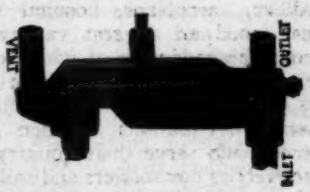
Mr. Gage's letter came as a reply to an inquiry by the Mayor as to the progress being made in closing the gap where two recent breaks occurred in the surface pipe. Next Wednesday or Thursday, Mr. Gage writes, the company will be ready to tie in the permanent line. Unless a break should occur meantime, Dallas will not experience another gas famine in years, it is believed. The entire permanent construction is to be completed by Jan. 15, says Mr. Gage.

RITER-CONLEY COMPANY

STEEL CONSTRUCTION

PITTSBURGH

HIGH PRESSURE



COMBINATION STYLE
(With Mercury Seal)

Pacific Coast Representative
C. B. BABCOCK CO.
No. 768 Mission Street
San Francisco

REYNOLD'S

ARTIFICIAL GAS GOVERNORS

AND

NATURAL GAS REGULATORS

For All Kinds of Pressure Reduction

WRITE FOR CATALOG

REYNOLD'S GAS REGULATOR CO.

SERVICE GOVERNORS

"OLD STYLE"
(Without Seal)

Main Office and Works
ANDERSON, INDIANA

Stamford, Conn., Company to Raise Rates

The Stamford Gas & Electric Company announces an increase in rates. The new rates will take effect on bills rendered Jan. 31, 1918. This action is the same as that taken by practically all utility companies in the State, the reason being the enormous advance in the price of all material, labor, taxes and supplies.

The company has been unable to make any main extensions this year, owing to the price of cast-iron pipe. This formerly cost from $20 to $25 per ton. It now costs three times as much, and is very difficult to procure.

About two years ago the company let contracts for the rebuilding and modernization of its plants. Part of this work was put into operation a year ago. The balance of the work has now been completed. Officials of the company state that they would have been compelled to increase the rate some time ago, but for several favorable contracts for material used in the manufacture of gas and electricity, which did not expire until late last year.

Steam coal has doubled in price since last year. Oil, of which it uses many thousand gallons each month, in the manufacture of gas, has increased over 60 per cent. All of the supplies have increased in price. Many things formerly used in the business cannot be obtained at any price.

It is well known that the company has in the past made frequent voluntary reductions in the rates. While the officers of the company regret that they are compelled to make increases at this time, they assure that the rates will be reduced at the earliest possible opportunity.

Lynn May Pay More for Gas

Because of the high cost of coal and oil, the Lynn Gas & Electric Company officials are contemplating raising the price of gas to 95 cents per 1,000 cu. ft. The present price is 85 cents, established two years ago, with a reduction of 10 cents if paid within a certain period after the bill is sent to consumers. A statement issued recently by John S. Bartlett, president, said that the company had made extra efforts to keep the price at 85 cents, but material, labor and other things have advanced in price to such an extent that the company feels it must protect its stockholders as well as give good service. The Lynn company uses 70,000 tons of soft coal and 2,000,000 gallons of oil during a year.

Strong Flow at Ada, Okla., Well

The gas well of the American Oil Refining Company in Section 17-4-6, near Ada, Okla., is so strong that much of it has run wild. The flow is now 40,000,000 cu. ft., and has been turned into the pipe lines of the city to keep from bursting the casing in the well.

Ludington, Mich., Consumers Vote Company an Increase

At a special election Ludington, Mich., voters approved an ordinance granting the Ludington Gas Company right to increase rates from $1.25 to $1.35 per thousand. The city commissioners had found the company was losing $4,000 annually.

Janesville, Wis., Company Asks Permission to Increase Rates

On Saturday morning, Dec: 29, 1917, at the offices of the railroad commission in Madison, a hearing of vital interest to Janesville patrons of the New Gas Light Company, of Janesville, Wis., was to be held. Acting on the petition of the company that they be granted permission to increase the present rates 15 per cent to the consumer to start Jan. 1, the hearing had been set.

The present rates, $1.30 for the first 2,000 cu. ft. per month, $1.15 for the next 3,000 and all in excess of 5,000 ft. per month at the rate of $1 per thousand, with 10 cents per thousand cubic feet added to the above rates if bills are not paid within ten days after presentation of the date of delivery, the minimum bill being fixed at 50 cents per month.

The company asks for the permission to increase the rates for the reason "the cost of production and distribution has increased. The company does not now ask to increase its schedule sufficiently to cover the total amount of such increase in the hope that such increase may be temporary and the company resumes the right to at any time in the future pray for a further increase or reduction."

The Doctrine of Labor and Materials

The present business of the United States is war—war to exterminate autocracy and unrighteousness and to establish peace among the nations of the world.

The President has stated that the war can be won only if all the people of the country unite in a common purpose to defend our shores from aggression. No one group of people, or two groups, or three groups can win the war. It can only be won by the united and continuous co-operation of every man, woman and child. The two Liberty Loan campaigns have demonstrated the willingness of our people to reach down into their pockets and lend their dollars to the Government. A plan has now been perfected which will enable all our people without exception to lend their money to the Government.

The plan proposed has, however, an object even more important in the present crisis than the actual money which it will produce. It is based on fundamental principles so simple and so direct in their appeal to our people that they cannot fail to meet with enthusiasm and universal response. These principles involve the saving of life. They involve pointing out to the citizens of the country that we cannot support a vast army in the field and a great navy at sea and at the same time spend the same amount of money we used to before the war, for all manner of articles which may be perfectly proper to buy in times of peace, but which are not necessary to the carrying on of the great war which we are now fighting.

We have got to get behind the Government, which is devoting its entire energies to waging a great warfare for freedom. This warfare requires putting men in the field and keeping them fed and clothed. It requires the production of ships, and shells, guns and rifles, motor trucks, horses, saddlery, aeroplanes, hospital supplies, food and a great variety of goods the production of which calls for vast industrial plants from one end of the country to the other, manned by millions of men and women, who serve their country as effectively as our soldiers and sailors.

If the American people continue to require all the pleasant and comfortable luxuries which they consumed before the war they are making it necessary for these thousands

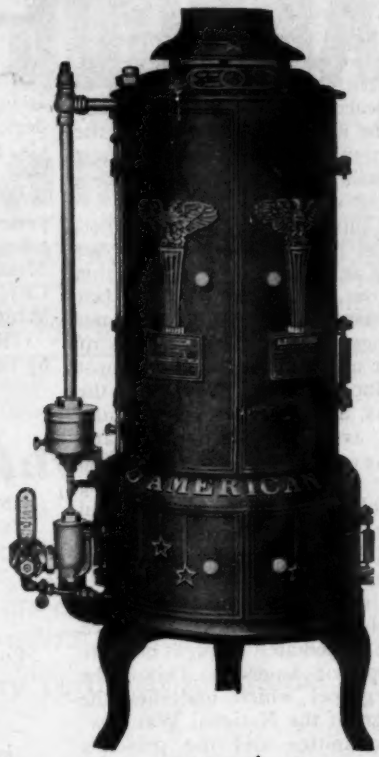
(*Continued on page* 18)

A New Dollar Mine

Appliance men who are not selling water heaters in middle class homes are overlooking the greatest opportunity in the appliance field.

AMERICAN

Gas-Fired Automatic
Water Heaters



—are sold at a price that is within easy reach of the man of modest means, and offer a wonderful opportunity to the appliance man who is looking for a heater that will boost his sales beyond the mark of previous years.

Write the American Sales Department for Interesting "Reasons Why"

AMERICAN WATER HEATER CO.
SAINT LOUIS, MISSOURI

A Busy World Is Short of Labor

Storekeepers, manufacturers, business men everywhere are up against a shortage of labor. Grasping every idea for better, faster work, they are not overlooking LIGHT—the Dad of all efficiency —eye-resting gas light.

Safety with speed requires an even spread of illumination everywhere, and gas with the

"Reflex-20"

makes this possible because of the low cost of installing, the low cost of maintenance and gas, and the high power of the unit. Hence the Harvest for the Gas Company with the "Reflex-20." Materials enough on hand to make up some more lamps, but to be sure of present prices you should get your orders in today.

WELSBACH COMPANY
Factories: Gloucester NEW JERSEY

The "C-C" Lighter—"the pilot that won't blow out"—is making a hit on "Reflex-20" installations

(*Continued from page* 16)

of factories and shops, employing millions of men and women, to produce articles which do not help to bring peace a day nearer, when they might be devoting themselves to the production of the necessary things which will help to bring the war to a victorious conclusion.

Both things cannot go on together. We have pledged the honor of our country and our people to fight this war to our last dollar and to our last man, if necessary. America does not break her word. The necessities of the war must be produced and must be produced quickly. The key to the situation, therefore, rests in the hand of the average man, woman and child in every State in the Union who can, by refraining from everything not absolutely necessary to healthful efficiency, release strong arms to the production of materials of war and the support of our army and navy.

This is the philosophy of labor and materials. This is the lesson which must be immediately brought home to the people of America. This is the sacred gospel which underlies the campaign of the National War Savings Committee and the principle which the members of the War Savings Societies pledge themselves to follow and to induce others to follow, not for one day, or one week, but honorably, patriotically and persistently until we have fought this war and won it according to the highest traditions of our country.

Our fighting forces are formed of companies of soldiers and sailors banded together to serve their country. War Savings Societies will be formed of companies of savers banded together to save their country. For the success of our army and navy, every company of soldiers in France, the crew of every ship should have back of it at home a company of savers. As a united people, consecrated to the great task which lies before us, we cannot fail.

Dayton Company Distributed Bonuses to Employees

C. A. Ward, president of the Dayton Gas Company, announced that the company distributed bonuses to employees as Christmas gifts amounting to approximately $6,500. This was distributed in Liberty Bonds, and the odd amounts in cash. The Ohio Cities Gas Company, which owns the Dayton Gas Company, did the same everywhere to all its employees.

New Rates Allowed at 8 Indiana Cities

The Public Service Commission of Indiana has recently issued four orders, in which the Northern Indiana Gas & Electric Company was authorized to increase its rates for gas to large consumers during a two-year period, beginning Jan. 1, 1918, in the cities of Fort Wayne, South Bend, Mishawaka, River Park, Michigan City, East Chicago, Hammond and Whiting.

The increases are made necessary by the heavy increases in cost of materials, labor, etc. In their prayer, the petitioners prayed "authority to increase the gas rates for industrial purposes, and avers that the reason is that the price of coal, oil and other materials, as well as that of labor, has increased to such an extent that it is no longer possible for petitioner to furnish gas for industrial purposes at the rates now in force, without great financial loss to it, and without jeopardizing the supply of gas for domestic purposes."

The new rate order for Fort Wayne is as follows:

LIGHT, FUEL AND POWER

Monthly Consumption	Rate per 1,000 Cu. Ft.
First 10,000 cu. ft. or any portion thereof	$0.85 net
Next 20,000 cu. ft. or any portion thereof	0.80 net
Next 20,000 cu. ft. or any portion thereof	0.70 net
Over 50,000 cu. ft.	0.65 net

Minimum charge: 50 cents per meter per month.

All bills rendered under the above rate table payable monthly.

For the cities of Hammond, Whiting and East Chicago:

FOR ALL PURPOSES

Monthly Consumption	Rate per Month Gross	Discount	Net
First 30,000 cu. ft. or any part thereof	$1.10	0.10	$1.00
Next 20,000 cu. ft. or any part thereof	1.00	0.10	0.90
Next 25,000 cu. ft. or any part thereof	0.90	0.10	0.80
Next 425,000 cu. ft. or any part thereof	0.80	0.10	0.70
Over 500,000 cu. ft. or any part thereof	0.75	0.10	0.65

In effect during 1918 and 1919.

For the cities of South Bend and Mishawaka and the town of River Park, Ind., the rates are now to be:

Monthly Consumption	Rate per Month Gross	Discount	Net
First 10,000 cu. ft. or any part thereof	$1.00	0.10	$0.90
Next 20,000 cu. ft. or any part thereof	0.90	0.10	0.80
Next 20,000 cu. ft. or any part thereof	0.80	0.10	0.70
Over 50,000 cu. ft. or any part thereof	0.75	0.10	0.65

Minimum bill: 50 cents per meter per month.

The above discount of 10 cents per thousand cubic feet will be allowed on all bills paid at the office of the company within ten days after presentation.

No discount on minimum charge.

For Michigan City, Ind.:

FOR ALL PURPOSES

Monthly Consumption	Rate per Month Gross	Discount	Net
First 30,000 cu. ft. or any part thereof	$1.10	0.10	$1.00
Next 20,000 cu. ft. or any part thereof	1.00	0.10	0.90
Next 25,000 cu. ft. or any part thereof	0.90	0.10	0.80
Next 425,000 cu. ft. or any part thereof	0.80	0.10	0.70
Over 500,000 cu. ft. or any part thereof	0.75	0.10	0.65

Minimum charge: 25 cents per meter per month.

The above discount of 10 cents per thousand cubic feet will be allowed on all bills paid at the office of the company within ten days after presentation.

No discount on minimum charge.